

CHEMICAL MARKETS

VOL. XXVIII

JANUARY, 1931

No. 1.

The Glittering Decade

TEN years ago chemical production contracted spasmodically from the colossal mid-war demands—but soldiers, statesmen, even the man on the street, had learned the fundamental importance of chemicals in modern industrialism and our chemical executives had seen a vision of chemical operations upon a scale undreamed of before. The fulfillment of that vision, not only in the merger movement, but much more basically in the invasion of many new industries by chemical operations in not only the substitution of chemical for mechanical processes, but also of new chemical raw materials, is the plot of the chemical industry's romantic and adventurous story during the decade from 1920 to 1930.

WE HAVE built a virtually new chemical industry upon new foundations. World chemical trade dislocated by the war has sought new channels. Two great natural monopolies—nitrate and camphor—have been broken. Two new chemical products—rayon and lacquer—have come out of the laboratory to occupy a prominent place in our commercial activities. Synthetic ammonia, synthetic acetic acid, synthetic methanol, new synthetic ethyl alcohol have come into effective competition with older processes. The uses and the prices of such basic industrial chemical materials as solvents, acids, and alkalis have gone through fundamental changes.

Improved technique, both in plant and process, has moved the very foundation of the chemical price structure. In no similar period have the chemical consuming markets so expanded. No other ten years can show a fraction of the financial and productive concentration which we have just witnessed. It has been a brilliant, stimulating period through which we chemical people have lived.

ALL of this glittering decade has not been pure gold. It opened and it closed in the midst of pressing hard times. In Washington there have been serious expansions of bureaucracy and dangerous tampering by the federal government with economic and social problems. We have built the highest tariff wall around the world's greatest supply of gold reserve. A complete passing of that sturdy individualist, the chemical manufacturing proprietor, and the resulting absorption of the small operating company is seen by some as a threat against some of the fundamental American characteristics to which the country owes much.

The glittering decade has left us a legacy of brilliant accomplishments in chemical fields tempered with serious unsolved problems for the chemical future. We have reasons to be proud, but there are good reasons why we should be very humble.

WEST SOUTH CENTRAL STATES

Here cattle, oil, cotton, sugar, multiply the country's wealth; and the proximity of contributing industries like "American" Alcohol is valuable.



Ethyl Acetate	Butyl Stearate
Butyl Acetate, Nor.	Refined Fusel Oil
and Sec.	Dimethyl Phthalate
Amyl Acetate	Diethyl Phthalate
Amyl Propionate	Diamyl Phthalate
Butyl Propionate	Dibutyl Phthalate
Butyl Butyrate	Dibutyl Tartrate
Ethyl Lactate	Triacene
Butyl Alcohol, Sec.	Special Solvents and
Amyl Alcohol	Plasticizers

And when your good basic material is "American" Alcohol, you add economy to your program. For "American" has these advantages which show on the credit side of the balance: scientific manufacturing methods, diversified plants to facilitate delivery, repeated good quality.

**AMERICAN
COMMERCIAL ALCOHOL
CORPORATION**

Plants:
Pekin, Ill.
Gretna, La.

Plants:
Philadelphia, Pa,
Sausalito, Cal.

Hail and Farewell Nichols, Dow, Melchett—three great chemical giants—are dead, and their deaths mark memorably the closing of an epoch in chemical industry. Reared as they were in such different environments, distinct as each was as his own strong personality, inspired as they were by such different ideals, nevertheless, the three were arch types of a vanishing race of chemical executives. They were the sturdy pioneers, the dominating individualists who personally controlled the affairs of their great companies. The titanic burdens of individual responsibilities which they bore so ably will in the future be carried on many broad shoulders. Their compeers and their successors are going to be men of different capabilities and characteristics. Their single-handed triumphs will be followed by the victories of modern organization. Like the ancient gods and heroes they will pass into our chemical mythology a cherished memory and a dynamic inspiration.

Buying Power A stabilization employment plan whereby employees of not less than two years continuous service will be guaranteed work throughout 1931 has been placed in effect in one of the large departments of the General Electric Works. Closer at hand is the announcement from the president of one of our large fine chemical companies assuring their staff now working of uninterrupted employment.

The continuance of the present recession is aggravated by the curtailment of buying on the part of those gainfully employed. The working man or woman is consciously or subconsciously afraid that unemployment is just around the corner. This is not strange. Psychologists have made healthy men sick by mere suggestion. Those working are saving abnormally and spending subnormally. Savings bank deposits, Christmas funds and the sale of life insurance were larger than ever, indicating clearly that income over and above living expenses is being held in a liquid state for possible emergencies. Furthermore, the head of the family knows that an automobile, a refrigerator or a radio half paid for is a liability and not half an asset.

Not every employer is in the fortunate position of the General Electric and able to assure his employees of continuous work. But those that are, and they are legion, could aid materially in shortening the present period of uncertainty. No company, nor individual is immune from the effects of poor business. In a common cause then, and for the direct

benefit of all, let those that can, emulate the example of G. E., and Squibb. Until such time the so-called "Buy Now" campaigns are likely to fall on deaf ears.

Molasses Restrictions "It never rains but it pours", appears quite applicable these days to the alcohol industry.

To the present uncertainty of the consumption of methanol as an anti-freeze, the introduction of a new denaturant for the completely denatured formulas, the chemical production of ethyl alcohol directly from ethylene, and the final adoption of new enforcement regulations, must be added the disconcerting problem of a possible program of world-wide sugar curtailment. No one capable of speaking with authority seems willing even to hazard a guess as to the ultimate effect of curtailed molasses output on alcohol production costs.

With the history of the Brazilian coffee scheme, the Stevenson Act, and our own Farm Board fresh in mind, the chances are greatly against the success of the sugar restriction proposition. However, with these striking examples of failure as guides to future action, the sugar planters may avoid some of the pitfalls. Certainly, by holding the effective date open until such time as all of the producing factors have joined the movement and by attempting to keep production more nearly in line with actual needs, through the control of exports rather than restricting acreage, some of the sins of omission and commission of earlier failures may be avoided and the plan carried through. Regarding their molasses by-product the planters should not forget that this natural raw material for alcohol manufacture is now in competition with a synthetic process, and they would do well to study the commercial histories of camphor, indigo, and vanilla.

British Free-trade Great Britain, as represented by the MacDonald Labor Ministry, seemed for several weeks prepared to revert to English traditions of free-trade and had selected the dye industry as the first innocent to be bound to the altar of internationalism. The Laborites, aided and abetted by the Color Users Association, were forgetting the bitter lessons of the early period of the War. During 1913, the total production of British dyes amounted to 9,144,134 pounds, while imports reached the amazing total figure of 32,603,000 pounds. By 1928, the pendulum had swung in the opposite direction,

production amounting to 51,187,472 pounds, and imports but 3,934,000 pounds. In addition, sixty-four per cent of the domestic consumption, or 1,877,172 pounds, of vat colors were made in 1928 where fifteen years previously not an ounce was manufactured.

The general consensus of opinion abroad seems to indicate that the British dye makers have held to a high spirit of co-operation and self-restraint. To withdraw tariff protection at a time when other countries are eagerly seeking desirable export outlets for surplus dyestuffs production would seem to have guaranteed a period of adversity for English dye-makers.

We, in this country, may by observation, learn a great deal by simply watching events in Great Britain. If England insists on throwing wide open the doors of free-trade, in the next six months or a year, let us hope that American dye producers will share in the division of resulting spoils. If this policy if finally adopted proves as ruinous to the British dye industry as we suspect it may become let us trust that our Congress will not ignore a plain object lesson.

Quotation Marks

Few realize the vast influence which the various technical journals have on research. One that stands out is the way they have been sponsoring research for the past few years. However, this phase of their influence is distinctly secondary. Their principal contribution to research is the vast amount of edited and correlated results of various scientific investigations which they have preserved for future use.—*Textile Colorist*.

In selling commercial fertilizers, the manufacturers have in many cases considered the containers to be just what their name indicated—a receptacle for holding the fertilizer. Not enough attention has been given to having the containers carry the manufacturer's advertisement.—*American Fertilizer*.

Open season for loose talk and loose thinking on what is oracularly called The Business Situation is right now in full swing.

The homely fact is, business is neither as bad as the croakers say, nor as good as the hopers would like to believe.—*Advertisement of the Saturday Evening Post*.

By permitting their stocks to become depleted, many merchants have unwittingly contributed to the hampering of trade activity. Cautious buying has been the rule in many lines of business. Evidence is accumulating that customers sometimes are unable to get what they want.—*Manufacturers Record*.

More effective machinery than any so far devised is needed for dealing with the problem of government restrictions on trade in raw materials. International agreement on basic principles is the first requirement of the situation. An international conference on government control of access to raw materials might be able to formulate adequate basic principles. Establishment of international machinery for interpreting the principles agreed upon and thus gradually elaborating a body of "fair practices" is the next important step. The hope of observance of "fair practices" lies in the development among nations of the opinion that they are to be observed rather than in any form of enforcement.—*International Control of Raw Materials*, by Wallace and Edminster.

The increased use of power is a favorite way of comparing the industrial prosperity and the standard of civilization of the various countries. Power is fundamental in quantity production, which has been the delight of countries capable of absorbing a large amount of manufactured goods, and the despair of those in which underpaid hand labor is still the outstanding characteristic of industry.—*Industrial and Engineering Chemistry*.

Faith—in ourselves, in our works and in our fellow-men has in a scant 100 years made the United States the leading country in the world. The most romantic phase in the history of modern business is in the faith that was created and built up by industrial leaders.—*Sales News—General Laboratories, Inc.*

The adoption of a five-day week so strongly advocated by President Green of the American Federation of Labor is generally approved provided it shall be national in scope. Otherwise it simply joins the class of the freaks, and will be fought by industrial interests to a bitter finish.—*Fibre and Fabric*.

The old rule of supply and demand still works. But, as always, the lines of industry that strive to keep production within bounds of consumptive requirements are more prosperous than those that do not.—*Wall St. Journal*

Fifteen Years Ago

(From our issues of January, 1916)

Monsanto Chemical Works, St. Louis, Mo., announces the production of acetphenetidin and phenolphthalein.

Congress is asked by Secretary McAdoo to appropriate \$20,000 for dye experimental work.

Thomas A. Edison's plant at Silver Lake, N. J., for the manufacture of synthetic phenol, recently destroyed by fire, is to be rebuilt.

Paterson (New Jersey), Chamber of Commerce divulges preliminary information on the incorporation of a \$1,000,000 dye stuff company.

United States Alcohol Co., is reported closing \$25,000,000 sale of alcohol with the French government.

The Chemical Year in Review

1930's American chemical developments interpreted in the terms of the future industrial situation.

DIFFICULT business conditions have engaged the immediate attention of our leading chemical industrialists during the year past, and not unnaturally have left their mark upon the developments of 1930.

During a twelve-month when the American price of basic commodities (industrial raw materials and foodstuffs) declined an average of 23.6 per cent. and when the manufacturing production of the country is variously estimated to have been from 40 to 50 per cent below the output of 1929, chemical marketing conditions were naturally strained. Consumption fell off. Buyers exerted great pressure upon prices. Fortunately for the chemical makers two factors that commonly increase the distress of such a period have been comparatively unimportant. There was but little carry-over of most chemicals and the inventories of consumers were small, accordingly the depression was not initially aggravated by an accumulated overproduction. Furthermore, the many mergers of the past five years had to a great extent cleared away small, weak competitors, whose dire necessity in a weak market often forces unwarranted price cuts.

The Price Situation

The American chemical price structure had been materially solidified by a long series of orderly price reductions during the prosperous decade of 1920-30. These reductions had been brought about in part by technicological advances, as in the case of borax, aniline oil, ammonia, and methanol; and partly too by increased production, as exemplified by butanol, chlorine, and phthalic anhydride. Contributing to these price reductions was the free state of competition in the United States where no single, dominant chemical company occupies a monopolistic position.

This fortuitous combination of favorable elements in the domestic chemical market has enabled the American chemical industry—when compared with other American industries—to come through 1930 in good shape. Contrasted with the average commodity price decline of 23.6 per cent the decline in chemical prices of 7.3 per cent is notable—especially so when we remember how delicate is the price adjustment of chemical supply and demand. Other indicators point to the stability of our chemical interests. Published balance sheets show that chemical operations have been rather exceptionally successful, and in the stock market debacle chemical securities have withstood exceptionally the force of the downward movement.

Products as Competitors

What the immediate future holds is a puzzle yet unsolved; but we find that our leading chemical executives have almost unanimously made up their minds that the decline in commodity prices is a cause, not a symptom, of the present situation; and that the chemical future will belong to those companies who by still further cutting costs and increasing sales efficiency will be able to show profits in world markets that even for the next ten years are likely to be governed by the increasing purchasing power of gold.

It is not a soft and pleasant economic prospect. But it is one that will put a high premium upon that basic function of applied chemistry which we take it is to furnish industry with cheaper and better raw materials and with chemical processes which save either time or labor, or both.

Plainly the chemical marketplaces of the world are to be a battlefield upon which products, rather than companies, will be the combatants. On three important fronts—solvents, alkalies, and fertilizers—

contact with the enemy, as the military men say, has already been effected.

Commercial production of synthetic ethyl alcohol from the ethylene of natural gas by the Union Carbide began last Spring. This Winter an increase in the production of mixed amyl-butyl alcohol to 150,000 gallons monthly and of iso-propyl alcohol to 90,000 gallons is projected by the Standard Oil. These developments forecast a coming contest between chemical and fermentation processes in the manufacture of solvents.

Past Experience No Criterion

To condemn the ethylene process to failure because of the abortive attempts of Fritsche in Virginia thirty years ago, of Skinnergrove in England ten years back, and of Claude in France more recently, is to overlook two facts. First, the present operation starts with a raw material far richer in ethylene (from 25 to 30 per cent) and second, improved technique makes possible the separation of this material and its purification at a cost that no previous attempt even approached. On the other hand, to prophesy the doom of alcohol from molasses by fermentation on the basis that this synthetic process will operate at a plant cost of less than 15c a gallon for 96% alcohol is completely to ignore the economics of a by-product raw material. Molasses is selling at 11c. Once upon a time it sold for one cent. Even at three cents, alcohol is produced

with a raw material cost of 7½c and a total plant cost of 10-12c, according to efficiency. The possibilities inherent in such a situation are obvious. The long-talked-about 20c alcohol begins to look like a probability.

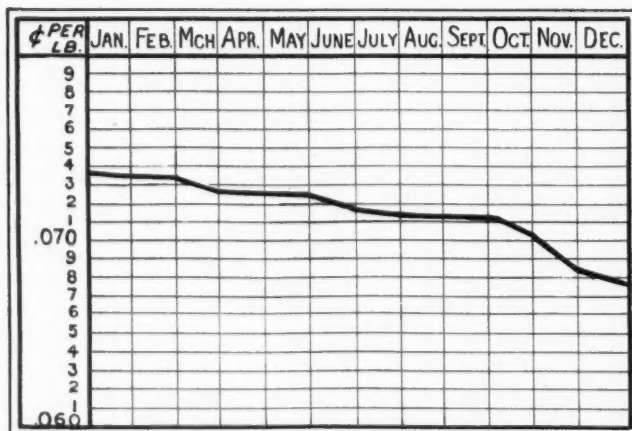
The alcohols from petroleum are in a somewhat different position. Although important improvements in technique are claimed, the determining price factor is said to be an 8c royalty. With this out of the way the mixed amyl-butyl would become distinctly competitive in the lacquer industry and iso-propyl might find an outlet in the enormous field of automobile anti-freeze.

During the past year this last market has for the first time been seriously invaded by methanol of synthetic origin. The old natural process of wood distillation seems to have received a hard blow in the recent ruling of the Prohibition Bureau which authorizes a substitute denaturant, non-toxic and made from petroleum.

Alkali Developments

Parallel developments, full of meaning in the competitive position of different important chemicals, have to be recorded in alkalis. Borax has continued its remarkable invasion of the glass industry at the expense of soda ash. Official figures are of course unavailable, but it is guessed that 8,000,000 pounds of borax went into glass in 1929 and that this consumption was nearly doubled during 1930. Excepting only lime the cheapest alkali in America to-day is ammonia, for as Jasper E. Crane, president of the Du Pont Ammonia Corporation, pointed out in an amazingly frank paper read last Spring before the Manufacturing Chemists' Association, "ammonia at six per pound is equivalent to 2.5 per pound for caustic soda." In handling, in the by-products it yields, and in recovery problems ammonia enjoys advantages over the other alkalis, and it is small wonder that extensive experiments are being carried on to perfect its efficient use in digesting paper pulp.

During the year several long steps have been taken towards chemicalizing the fertilizer industry. The Allied synthetic sodium nitrate plant at Hopewell has been expended with a corollary expansion of the soda



Average price trend of twenty representative chemicals

A glance through this list of chemicals will show a wide variation, they are representative of the chemical price structure.

			Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
ACID ACETIC.....	28% C. L. bbls. wks	100 lbs.	3.88	3.88	3.88	3.88	3.88	3.34	3.11	3.11	3.11	2.70	2.60	2.60
ACID SULFURIC.....	tanks wks.	ton	15.50	15.50	15.50	15.50	15.50	15.50	15.00	15.00	15.00	15.00	15.00	15.00
AMMONIA ANHYDROUS.....	100 lb. cgl. contract	lb.	.15½	.15½	.15½	.15½	.15½	.15½	.15½	.15½	.15½	.15½	.15½	.15½
CAUSTIC SODA.....	flake drums C. L.	100 lbs.	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35
COPPER SULFATE.....	C. L. bbls. wks.	100 lbs.	5.50	5.50	5.00	5.00	4.75	4.75	4.25	4.25	4.10	3.95	4.25	4.25
CHLORINE.....	tanks wks.	100 lbs.	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.40	2.40	2.40	2.00	2.00
SODIUM BICHROMATE.....	C. L. contract wks.	lb.	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07
BETANAPHTOL.....	250 lb. bbl.	lb.	.22	.22	.22	.22	.22	.22	.22	.22	.22	.22	.22	.22
PHENOL.....	250 lb. drums	lb.	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½
FORMALDEHYDE.....	U. S. P. wks. bbl.	lb.	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.06	.06
ALCOHOL NO. 5.....	tanks	gal.	.50	.50	.43	.42	.42	.40	.40	.37	.37	.37	.37	.37
CARBON TETRACHLORIDE.....	1400 lb. drums del.	lb.	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½
METHANOL SYNTHETIC.....	tanks wks.	gal.	.45	.45	.40½	.40½	.40½	.40½	.40½	.40½	.40½	.40½	.40½	.40½
ETHYL ACETATE.....	tanks wks.	lb.	.115	.115	.115	.115	.115	.11	.097	.09	.085	.085	.085	.085
LITHOPONE.....	L. C. L. wks. bbl. wks.	lb.	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½
RED LEAD.....	500 lb. bbl. wks.	lb.	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½
ZINC OXIDE.....	American bags wks.	lb.	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.06½	.06½
SODIUM NITRATE.....	92% crude c. l. N. Y.	100 lbs.	2.16	2.16	2.10	2.10	2.07	1.99	1.99	1.99	1.99	1.99	2.02	2.02
TRI SODIUM PHOSPHATE.....	bbl. c. l. wks.	100 lbs.	3.60	3.60	3.60	3.60	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.40
POTASH CAUSTIC.....	wks. solid	lb.	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½
AVERAGE PRICE PER LB.			.0732	.0732	.0727	.0727	.0724	.0718	.0714	.0713	.0792	.0705	.0684	.0679

ash plant at Syracuse. American Cyanamid has been building a new super-superphosphate plant at Tampa. At Weeks Island, La., an adaptation of the old Hargraves process is producing salt cake and calcium phosphates. A new flotation process in the preparation of phosphate rock; the extension of the process for neutralizing superphosphate with ammonia; and a new ammonium phosphate process in which the Koppers Company has become interested, are all chemical developments of the year. Despite this technical progress the fertilizer industry is in as bad a way as any branch of the chemical industry. The agricultural situation has adversely affected consumption and credits, and their marketing machinery has broken down badly. Their trade association made a rather pathetic fiasco of its attempt to improve competitive conditions and all signs point to a knock-down-and-drag-out fight between the large companies who manufacture and the small companies who mix. Like the solvents and the alkali industries, the fertilizer manufacturers are face to face with revolutionary technical advances which will shift the very foundations of their industry.

New Processes at Work

In several other fields, 1930 has seen notable new processes come into commercial operation. Several trial runs on a ton-a-day scale of the new acetic acid from corn wastes fermentation have been successfully completed by Commercial Solvents, and the Victor Chemical Works have their blast furnace phosphoric acid plant in running order. The newest refrigerant, for household use particularly, has appeared on the market in di-chloro di-fluoro methane, an operation that will materially be expedited by the recent ruling permitting the shipment in tank cars of anhydrous hydrofluoric acid, the first delivery of which has been made within the month from Easton, Pa. to Penn's Grove, Del. Although not strictly in the chemical area, the quick freezing of fish and meat has assumed truly commercial proportions, and the so-called du Pont ammonia 'cracker' has given great aid to chemical welding in competition with the electric arc method.

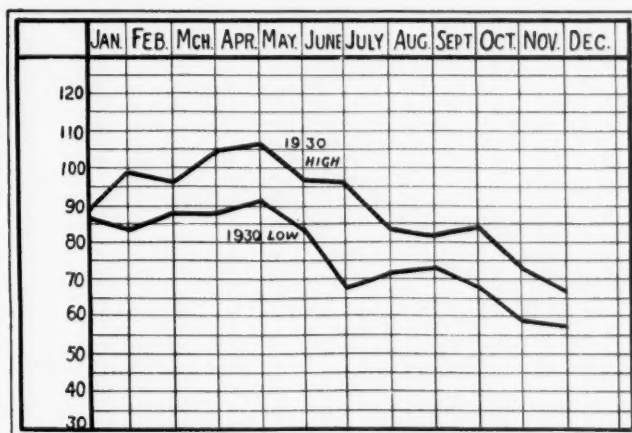
Petroleum continues to attract attention as a source of chemical materials, but this experimentation apparently still hangs on the brink of important dis-

coveries. The well advertised hydrogenation process of the I. G. Standard Oil alliance has been offered for license; but to date no refinery, outside these interests, has availed themselves of the opportunity. Natural gas has made more substantial chemical progress. The tapping of the fields in western Texas with pipelines to St. Louis and Chicago is highly significant. Some 2,000,000 feet a day are being piped away to an extreme distance of over a thousand miles, and competent estimates of the extent of this new field of over 1,500 square miles, place a full century as the time limit at this rate of consumption.

Merger Movement Checked

The merger movement has received a sharp check. This is not only because of the financial situation, but also because of a dearth of mergeable smaller companies. This set-back will, in the long run, probably be a benefit. It has given time for more thoroughgoing reorganization, and has undoubtedly checked not only the possibility of a merger of mergers, but also the tendency of the chemical consolidations to reach out into the field of companies making consumer goods.

The absorption of Roessler & Hasslacher by the Du Ponts brought them an extremely efficient chemical merchandizing organization, and also a commanding position in cyanides as well as a supply of sodium, the output of which at the Niagara Falls plant is being expanded to meet the growing demand of tetra-ethyl



Average high and lows for fifteen leading chemical companies

The following companies cover a wide field of diversification and are representative of the industry

	January		February		March		April		May		June		July		August		September		October		November		
AIR REDUCTION . . .	131	118	134	122	148	131	150	138	153	130	156	114	127	103	126	104	128	103	114	96	108	91	
ALLIED CHEM. . . .	280	255	282	265	324	265	343	296	319	295	318	223	275	240	271	241	284	232	243	194	212	185	
AMER AGR CHEM. .	7	7	7	6	10	7	10	7	8	5	7	4	7	4	7	5	6	2	3	2	2	1	
ANACONDA.	79	69	80	71	79	69	81	58	63	52	61	44	52	48	51	44	49	34	39	33	41	46	
COLUMB'N CAR'N	194	168	195	176	199	175	190	162	166	128	162	108	141	113	141	117	144	112	119	84	96	81	
COM SOLVENTS . .	31	27	32	28	36	31	38	31	33	25	30	20	28	21	27	22	28	20	23	17	19	14	
CORN PRODUCTS .	95	87	99	94	102	92	111	98	108	94	108	87	99	88	95	83	94	78	83	74	82	72	
DEVORE & RAYN'LS	35	30	42	33	42	39	41	35	39	33	38	22	23	21	24	23	28	19	20	18	19	17	
LIQUID CARBONIC	61	52	65	58	81	65	80	68	75	60	80	59	12	64	71	62	71	59	63	45	51	42	
U S ALCOHOL. . .	139	110	124	115	122	98	106	87	94	85	90	62	82	62	71	59	78	60	68	58	71	56	
STAN'D OIL N J.	66	62	65	58	75	58	84	72	81	71	80	60	75	63	74	67	70	57	62	52	55	49	
TEXAS GULF SUL.	62	54	64	60	67	59	65	60	61	55	60	48	60	51	59	55	60	53	56	50	58	53	
DU PONT.	117	115	131	124	143	125	145	132	134	120	131	100	118	95	118	102	124	101	109	88	95	84	
UNION CARBIDE .	90	76	94	81	105	91	106	89	89	79	85	60	76	65	79	66	82	65	71	59	64	55	
AMER CYAN B. . .	29	25	29	25	37	25	35	29	27	24	26	17	23	18	22	18	21	12	13	10	12	10	
AVERAGE HIGH. . .	98.2		96.7		105		106.1		96.8		96.0		84.5		82.8		84.9		72.8		66.1		
AVERAGE LOW. . .		84.0		88.5		88.9		91.4		83.9		68.8		70.8		74.4		67.5		58.8		56.8	

lead and the elimination of bromine from its process of manufacture. The consolidation of American Solvents, Rossville, and General Industrial Alcohol has brought this industry down to three important factors, while the combination of John Lucas and Sherwin-Williams unites two of the largest paint and varnish manufacturers. For the third successive year the leader in mergers has been the American Cyanamid Co. Their purchase of the old mercantile house of A. Klipstein & Co. and their entry into the apparatus and construction industry by the purchase of the Chemical Construction Co. are their most significant expansions, although their subsidiaries Calco and Kalbfleisch have both picked up and have a dozen small operations in the dyestuffs and heavy chemical sections.

In the midst of the stress and strain of this difficult, eventful year the chemical industry has been forced frequently to pause to pay its last tribute to great leaders of the past:

William H. Nichols, organizer of our first American chemical consolidation, the General Chemical Co.

which in turn became the hub about which was built the Allied Chemical & Dye Corporation.

Herbert H. Dow, founder and leader till his death of the Dow Chemical Company.

William J. Matheison, organizer and first president of the National Aniline Co.

John M. Wing of Wing & Evans, one of the great chemical merchants of the past generation.

Henry D. Whiton, head of the Union Sulphur Co., pioneer of hot water mining of sulfur.

T. Coleman Du Pont, one of the moving spirits of his famous family and prominent in the expansion of their interests into chemical activities.

Harvey Wiley, the Pure Food Law crusader.

George S. Davis, one of the original partners of the pharmaceutical house of Parke, Davis & Co.

Sidney Colgate, most popular and best known member of the third generation of soap-makers.

Sumner W. White, of the Mutual Chemical Co., leaders in the bichromate field.

Ellwood Hendrick, well beloved educator, brilliant essayist, and preeminent chemical diplomat.

Germany

Germany's important export position internationally is lessened by unfavorable internal and external trade conditions.

By Dr. Walter Roth
Editor, Chemiker Zeitung (Köthen)

IN IMPOVERISHED Germany, the chemical industry too, has had to suffer because of the world's economic depression. According to the figures placed at my disposal by the Society for the Protection of the Interests of the Chemical Industry in Germany, the export trade of the German chemical industry has decreased about 15% during the past year. The following table gives a survey of the export trade in chemical products:

	1928	1929	1930 ¹
Inorganic products (in million RM).....	260	290	250
Carbonization of wood.....	17	21	16
Nitrogenous fertilizers.....	280	280	190
Phosphorous fertilizers.....	13	16	10
Coal-tar dyestuffs.....	237	212	200
Mineral dyestuffs & Dye products.....	95	108	105
Varnishes, lacquers, cement.....	21	26	23
Explosives, etc.....	27	28	24
Pharmaceutical products.....	120	131	125
Ether, oils, perfumes.....	20	22	19
Cosmetics.....	15	15	15
Glues and gelatin.....	15	20	21
Tannin-extracts.....	5	5	5
Rayon.....	69	90	65
Molded products.....	31	34	22
Photographical products.....	46	60	55
Other chemical products.....	49	63	52
	1,319	1,420	about 1,200

¹Estimation based on figures Jan.-Oct.

The import of chemical products also has decreased during 1930 by about 10%. It amounted to in million RM as follows: 1928, 303; 1929, 299; 1930, about 270°.

The home consumption of the German chemical industry may best be judged by the following data: The sales in drugs and household chemicals have decreased about 8% according to the reports of the Research Institute for Market Trends at Berlin. The building volume in Germany during 1930 was about two billion RM or 25% less than in 1929. Therefore, the sales of all chemical industries which supply the building trade must have gone back accordingly. In the German textile industry employment fell at least 10 to 15%, compared with 1929. The sale of medical products likewise was reduced during 1930. A very comprehensive survey of the German chemical industry has been made during the past year by the so-called "Enquete-Committee." On August 12, 1925,

² Estimated from official figures of the first ten months.

the German Reichstag named a committee which was supposed to make a survey of the "Production and Marketing Factors of the German Industry." In the year 1926 began the survey of the chemical industry by the so-called Six working-group of the IIIrd. Subcommittee. This group submitted a report of over 500 pages which was published by C. S. Mittler & Sohn, Berlin.

This report, a masterpiece of the "Enquete," is divided into two parts: the findings of the committee itself and the enlargements of the experts. The report explains the peculiarities of the chemical production methods which often are in contrast to those of the mechanical industry. An isolated calculation of a single chemical product, independent from the general situation of the chemical enterprise is thus hardly possible. Chemical production is based on the co-operation of various, often complicated, processes which as a rule transform the original substance into several, and frequently many products. In the same way, the production of parent materials which are required for the production process of a certain product-group in most cases do not yield their materials alone, but in connection with other products. These are sold directly if they have a market, or are used in other chemical processes. Aside from the difficulties of the cost-calculation per product itself, the chemical industry has but limited possibilities for comparing costs or even calculating costs for two or several enterprises.

Chemical Conditions Peculiar

A detailed explanation of the peculiar conditions in the chemical industry is given in which because of the revolutionary character of chemical-technical progress the plant itself in most cases is of only transient importance, the depreciations however of utmost significance, and in which most of the firms even after years do not entirely progress beyond a certain provisory status of an experimental plant. Furthermore, the expenses for research-work have to be considered as a current expense of plant. At that, the different plants can not be clearly defined as to their production. Thus, the coal-tar dyestuff industry for a long time carried on the research work on nitrogen production, while to-day the nitrogen and dyestuff industries are conducting other experiments. With equal production capacity, from 80 to 100% more money is required by the chemical industry to-day than before the war. Depreciation should have increased in the same way. Wages in the German industry are about 70 to 80% higher than before the war, while the average price increase of the chemical industry rose about 25%. In spite of the difficulties, however, which the German chemical industry has experienced, through trade-political conditions, increasing competition, and the unfavorable after-effects of the war, its efficiency has rather increased than decreased. The reasons for this are high standards in its scientific work, its favorable international scientific and commercial relations, the

willingness to work and the intellectual capability of its workers. Justly the "Enquete" Report points out that the trade-political situation between the different countries has developed more and more unfavorably for the chemical industry which more than any other industry needs an unfettered exchange of commodities.

Competition Increase Noted

It points out further, that competition has increased and the demand for many products on the domestic market could but slowly be increased, because the market is already partly or totally saturated, and, further, because many consumers, especially in the agricultural field, are suffering from lack of capital and are unable to increase their consumption. The strongest obstacles, however, for the German chemical export trade constitute, according to the "Enquete" Report, the Russian foreign trade monopoly and the measures taken by England. Here and in some of the Balkan States, the German chemical trade has gone back considerably. In the United States and in China, the two next important markets of pre-war times, trade conditions are stagnant, in China on account of the civil war and especially on account of the competition of United States, and Japan, (financially in better shape) and in the United States, because of the high tariff. According to the "Enquete" Report the value of the German chemical export in million RM to the different countries during the last years was as follows:

	1913	1927	1928	1929 ¹
Great Britain.....	113.5	80.3	74.0	83.2
United States.....	105.0	114.9	119.7	148.0
Czechoslovakia, Austria, Hungary...	89.4	105.3	111.9	113.6
Russia.....	82.7	44.8	46.6	48.5
China.....	57.0	49.7	59.7	52.3
France.....	56.0	56.7	78.7	67.3
Netherlands.....	41.7	123.9	113.3	107.7
Italy.....	41.3	41.1	52.0	48.1
Belgium-Luxemburg.....	38.7	45.5	49.3	46.8
Switzerland.....	37.7	56.9	59.5	61.8
Japan.....	27.8	50.0	73.9	89.8
Rumania.....	20.8	15.9	16.8	14.5
Poland.....	...	30.4	31.2	24.3
British India.....	19.6	55.1	48.1	40.0
Sweden.....	16.7	35.9	35.5	33.3
Denmark.....	14.7	32.8	38.9	43.0
Spain.....	13.7	41.4	39.8	33.8
Turkey.....	13.7	5.7	5.0	4.7
Brazil.....	12.6	20.5	25.1	20.0
Netherland India.....	12.1	21.5	23.7	23.0
Argentina.....	10.7	21.5	23.1	22.5
Bulgaria.....	7.2	4.2	3.8	3.8
Chile.....	6.2	5.4	6.6	8.8
Australia.....	5.9	5.7	5.7	6.8
Finland.....	5.3	12.9	11.9	11.6
British South Africa.....	4.9	4.3	4.0	4.9
Egypt.....	3.2	10.1	12.5	15.6

¹Preliminary figures

While in nearly all industrial countries and also in Eastern and South-Eastern Europe the import of chemical goods has been more and more replaced by domestic production, China, Japan, British and Neth-

erland India have more than doubled their import. The Asiatic market now has about 15% of the world market, thus taking the place held by America before the war. The European countries comprising two-thirds of the world's trade before the war, to-day consume only 55 to 60% of the world's production. Their importance which also will not be diminished in the future, lies mainly in the fact that they require for their own chemical production large quantities of chemical auxiliary products. They are a market especially for newly found chemical products. The United States is in a similar position to the European producing countries regarding the supply of chemicals. The Asiatic market on the other hand absorbs just those products which in Europe and North America find growing difficulties for their sale.

One-Third of Chemicals Exported

Approximately one-third of the German chemical production is exported, two-thirds is taken up by the country itself. Where before the war the textile industry and the building trade were the two only major consumers, this place to-day is occupied by agriculture. This change was brought about especially through the replacement of Chile saltpeter by synthetic nitrogen fertilizers, and, further, through the fact that German agriculture has increased its nitrogen requirements from about 185,000 tons in 1913 to more than 400,000 tons at present. The market for chemical products, furthermore, has been increased considerably through the development of new industries, such as for example: the radio industry, and the expansion of the automobile, rubber and artificial leather, and electro-technical industries.

Reports by Chemical Leaders

The report of the "Enquete" committee, from which the above data on the chemical industry is taken, also contains descriptions of individual firms and branches of the industry. These reports, written by well-known leaders of the German chemical industry, represent most valuable material and give a true picture of financial and working conditions, the present production program of the different firms, price situations and the method of market regulation for the various products. Special mention should be made of the reports of the following experts: Dr. Bosch on the production and marketing conditions of the I. G. Farbenindustrie A. G., Frankfurt/Main; Dr. Bueb on the nitrogen plants of the I. G. Farbenindustrie A. G.; Dr. Bueb and Dr. Warmbold on the production and marketing facilities of the nitrogenous fertilizer industry; Dr. Caro on the production and marketing conditions of the Bayerischen Stickstoffwerke A. G., Berlin; Dr. Friedel on the same subject for the Lonza Werke Elektrochemische Fabriken G. m. b. H., Waldshut (Baden); Dr. Berckemeyer for the Koks-werke und chemische Fabriken A. G., Berlin; Clemm

for the Rhenania-Kunheim Verein chemischer Fabriken A. G., Berlin; Bensch for the "Union" Fabrik chemischer Produkte, Stettin; Hornemann for the A. G. der chemischen Produkten-Fabriken Pommersdorf-Milch, Stettin.; Fortsch for the Guano-Werke A. G., vorm. Ohlendorff'sche und Merk'sche Werke, Hamburg; Rasmussen for the Saccharinfabrik A. G., vorm. Fahlberg List & Co., Magdeburg, and the Mitteldeutsche Superphosphatwerke G. m. b. H., Magdeburg; Vorster for the Chemische Fabrik Kalk G. m. b. H., Koln; Dr. Eilsberger for the Deutsche Solvaywerke A. G., Bemberg; Dr. Goldschmidt for the Th. Goldschmidt A. G., Chemische Fabrik und Zinnhutte, Essen/Ruhr; Cordes for the Chemische Fabrik, Buckau, Ammendorf (Saalkreis); Haupt of the Union of Industrial Workers of Germany, Linz, Pauli, Roth and Sparre on labor conditions in the chemical industry; Dr. Busemann on production and market conditions for the Deutsche Gold und Silberscheideanstalt vorm. Roessler, Frankfurt/Main; Dr. Hess on the same subject for the Dr. Alexander Wacker Ges. fur elektrochem. Industr. m. b. H., Munchen; Dr. Muller for the Dynamit-A. G., vorm. Alfred Nobel & Co., Hamburg; Adam and Dr. Hamburger for the A. G. fur chem. Produkte, vorm. H. Scheidemandel, Berlin; Finck for the Verein fur chemische Industrie A. G., Frankfurt/Main; Dr. Fischer for the Holzverkohlungs-Industrie A. G., Konstanz; Dr. Theurer for the G. Siegle & Co., G. m. b. H., Farbenfabriken, Stuttgart; Dr. Esser for the Farbwerke Franz Rasquin A. G. Koln-Mulheim; Dr. Zeiss for the Schering-Kahlbaum A. G., Berlin; Dr. Fuchs for the J. D. Riedel-E. de Haen A. G., Berlin-Britz; Dr. Merck for the E. Merck Chemische Fabrik, Darmstadt; Vorlander for the Chemische Fabrik von Heyden, A. G., Radebeul-Oberlossnitz; Dr. Ungewitter on the frequency of accidents and sickness-cases in the chemical industry.

Other Reports

Aside from this "Enquete" Report on the Chemical Industry during the past year, other detailed reports appeared on the oil and oleo-margarine industry, the leather trade, and the iron industry, which for lack of space can not be gone into here, which, however, especially when considering the international complexity of these industries, deserve fullest attention, and contain valuable statistical material. A further working-group which in addition to other commodities is supposed to investigate all those products of the chemical industry destined for immediate consumption, as for example: perfumes and cosmetics, photographic products, soaps and washing-powders, rayon and artificial cloths, is still far from seeing the end of its investigations.

The planning and erecting of more and more nitrogen plants during the last years by the different countries threatened to cause over-production. In this

connection it is one of the greatest achievements of the past year that an international lime-nitrogen syndicate, and a convention between producers of Chile saltpeter and the atmospheric nitrogen industry has been formed. The lime-nitrogen syndicate includes Belgium, Germany, France, Italy, Czechoslovakia, Yugoslavia, Norway, Poland, Rumania, Sweden, and Switzerland, the combined output of which is 92% of the world's production. Japan and the United States of America are not markets for Europeans and are not members. The agreement is to hold in force from July 1930 till 1938, and the business is conducted by the European Cyanamid Export Co., Ltd., London, which has to provide a market for the production surpassing the demand of the member countries. It is calculated that the domestic market of the members which produce about 1.25 million tons of lime-nitrogen or 250,000 tons pure nitrogen can absorb 180,000 tons, so that at present about 70,000 tons have to be distributed by the central offices. In disposing of this surplus, countries like Yugoslavia and Norway which have only a limited demand for nitrogen are to be favored. The cartel is trying to propagate sales through special agencies in Egypt, England, Holland, Spain, etc.

The Nitrogen Convention

The nitrogen convention, Convention Européenne de l'Industrie l'Azote (C. I. A.) which after long discussions was signed for one year at Paris in August 1930 is binding on all countries except the United States of America. Members are Belgium, Chile, Czechoslovakia, England, France, Germany, Holland, Italy, Norway and Poland. The purpose of the C. I. A. is again to bring into equilibrium output and consumption of nitrogenous fertilizers, inasmuch as during the last years production far surpassed the demand. Including the lime-nitrogen industry of Europe the convention comprises more than 98% of the European nitrogen production and together with the Chile saltpeter industry about 80% of the world production. The way for this international convention was prepared through the nitrogen pact of July 1929. This agreement was entered into by the Chileansaltpeter-union, the English Imperial Chemical Industries, Ltd., and the German I. G. Farbenindustrie A. G., Frankfurt/Main with its Norwegian interests, as the principal participants. The convention was also preceded by the renewal of the German Nitrogen Syndicate in April 1930 which is to be effective from July 1, 1930-1937 and which comprises 98% of the total German nitrogen industry. The syndicate has also taken over the sale of nitrogen products for technical purposes, as for example: aqueous ammonia, nitric acid, ammonium nitrate etc. In connection with and as a result of these agreements the I. G. Farbenindustrie has acquired for the amount of 24 millions RM, the nitrogen plant of the Mont Cenis mine and has dropped its patent law suit against this mine.

While international agreements are thus in force for the nitrogen, dyestuff and hydrogen industries, for the last two for quite some time, the rayon, rubber, sugar, and certain metal industries, which are also suffering from overproduction, are still far from it.

Merging and rationalizing in the chemical industry made progress also during 1930. Special mention should be made of the merger of the Deutsche gold und Silberscheideanstalt, vorm. Roessler of Frankfurt/Main with the Holzverkohlungsindustrie A. G., in Konstanz, a firm founded 25 years ago upon the initiative of the former. The I. G. Farbenindustrie has centralized its dyestuff sales in its new office building at Frankfurt/Main which represents Germany's largest office building and covers an area of more than 200,000 square meters. The building also houses the central sales organization.

Conventions and Expositions

The year 1930 was rich in chemical and chemical-technical conventions and expositions. The Verein deutscher Dunger-Fabrikanten celebrated its 50th anniversary at Berlin on February 4th, the Verband der Chemisch-pharmazeutischen Grossindustrie, "Cepha" on December 12 at Frankfurt/Main, its 25th anniversary. The same anniversary was observed at Berlin on Dec. 5 and 6 by the Verein der Zellstoff und Papier-Chemiker und Ingenieure, June 16-25 the 2nd World Power Conference took place at Berlin with great success and great attendance. Other outstanding expositions were the International Hygiene-Exposition at Dresden, and the International Leather-Exposition at Berlin. The "Komitee für Chilesalpeter in Berlin" could show in its anniversary publication how the export of Chile saltpeter from 8,000 tons in the year 1830 when the first shipment of 850 tons left for North America rose to about three million tons per year in the past year. Of independent firms the Deutsche Solvay-Werke, Bernburg, celebrated its 50th, and the Farbenfabriken Michael Huber, München, its 150th anniversary.

In the chemical industry technical progress is not achieved in the course of one year. Everywhere however, in the chemical institutes, research institutions and chemical works laboratories one finds the greatest activity covering the fields of synthesis, especially of organic compounds, of catalyzers, of wood-research, cellulose and rayon, synthetic-plastics, medicines, dyestuffs and mineral colors, metals and alloys, work-stuffs, the mechanization and intensification of agriculture, road construction, etc. Thus, it may be hoped that the chemical industry which during the last years could look back upon great achievements in the nitrogen and hydrogen industries, will contribute its part by cheaper production of important commodities and cheaper processes, as well as increased exports to improve Germany's present difficult situation.

The English, French and Italian review articles will appear in the February issue.

Our Changing Chemical Marketplaces

New production and marketing centers are rapidly replacing to a great extent older locations. Competition and the urgent necessity for lower manufacturing costs are compelling motives in the establishment of plants closer to points of consumption.



By Willard L. Thorp

EVERYONE is familiar with the extraordinary geographical shift which has recently taken place in the cotton textile industry,—a migration which has embarrassed New England and encouraged the South. The boot and shoe industry has made a similar geographical switch with the breakdown of New England's supremacy as new areas developed,—in this case, in the Mid-west. The mining of soft coal in Pennsylvania has lost its primary position to West Virginia, Illinois, and other newer areas.

While these particular instances are perhaps more spectacular than the records of most industries, they present a tendency which is continually in operation. Business enterprise in seeking lower costs is willing to shift the location of its activity.

Not all industries can be located wherever the manufacturer wills. A brick plant must be near the

clay pit: a hydro-electric plant must be near the fall of water. Such factors, however, are not as limiting as has been usually supposed. Agriculture might seem to be decidedly fixed in location. However, both cotton and wheat areas have been most decidedly changed within the last thirty years. Furthermore, our freight schedules are often so constructed that it is cheaper to ship the raw materials than the finished products. An example of this is evident in the iron and steel industry. The United States Steel Corporation has the choice of shipping coal to iron-ore or iron-ore to coal. It is experimenting with the first in its plant near Duluth, and with the second in its plants in Pennsylvania.

The movement of industry is not necessarily limited to existing organizations. To be sure in some cases the business man has picked up his machinery, and even his labor force, and moved to a new locality.



*The last ten years has witnessed a remarkable industrial chemical growth on the Pacific Coast.
The Hooker Electro Chemical Co., plant at Tacoma, Washington*

However, in the past the shift has taken place more often by the closing of plants in one place and the opening up of activity by new concerns in some new area.

In the last ten years a new kind of migration is visible, the establishment of branch plants. This is not surprising. Costs of production have steadily decreased as technical methods have been proved. The cost of shipment has therefore become an increasing part of the total expenses of putting the goods in the consumers' hands. The opening of branch plants has proven perhaps the most effective way of reducing the cost of shipment.

One of the most interesting applications of the principle of operation through branches is that of subsidiary companies in foreign countries, actually manufacturing abroad rather than exporting the finished products. The list of concerns which have adopted this practice would be very long, and would include such representative producers as the Singer Manufacturing Co., the Standard Oil Co. of N. J., the B. F. Goodrich Co., the International Harvester Co., the Ford Motor Co., the American Radiator Co. and many others.

Some fragmentary material is available concerning the development of branch plants in this country. A study made by the United States Chamber of Commerce for the year 1927, gives certain facts concerning the establishment of new branch plants in that year. They noted 218 cases in which new branch plants were established. In 99 of these the branches were in the same general section of the country, but the rest were instances where the branch was quite clearly a real migration. In fact, 42 of the 55 branches established on the Pacific coast, for example, had headquarters in the east.

Of the 218 instances reported in the study, twenty-five were in the general group of chemical industries,

as the term is used by the Bureau of the Census, divided as follows:

Chemicals.....	10
Gas, manufactured.....	4
Ink.....	2
Paints and varnishes.....	2
Perfumery, cosmetics and toilet preparations.....	2
Rayon.....	2
Druggists' preparations.....	1
Mucilage, paste and adhesives.....	1
Oils.....	1

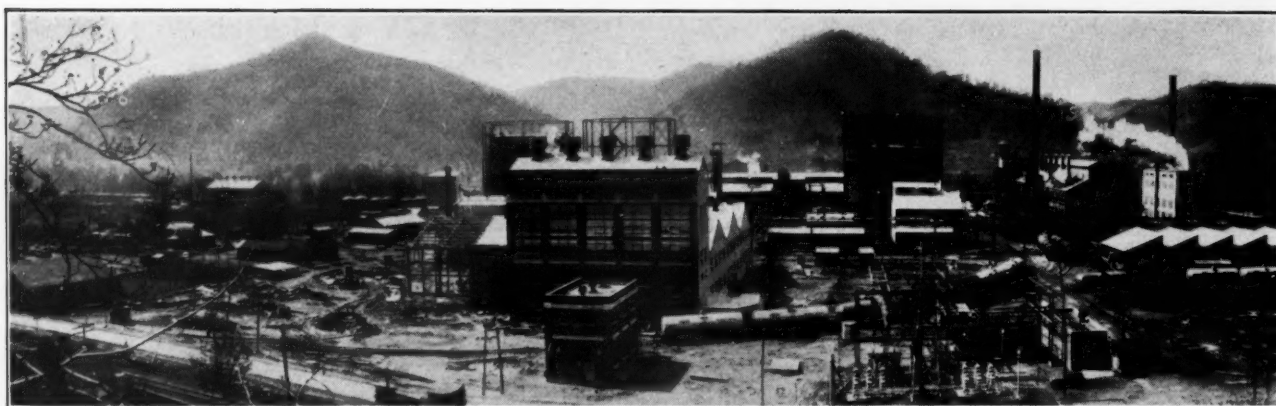
25

These branches were widely scattered among twelve states, with California, New Jersey, Ohio, and West Virginia accounting for one-half of them. This may seem a small list, but remembering that this one year witnessed but 218 instances in all manufacturing industry, it indicates clearly that the chemical industries are participating fully in modern trends.

One obvious trend is the breakdown of areas which formerly dominated manufacturing. In the last fifteen years the New England states and to some extent the Middle Atlantic states have failed to keep industrial pace with the rest of the country. Great increases in manufacturing are found in the Pacific states, in the East-North-Central and the East-Southern-Central divisions. For example, in 1925 Massachusetts had 2% less wage earners than in 1914 while New York state had increased only 2.4%. Michigan, however, had nearly doubled its wage earners. Tennessee, Alabama and Oklahoma had increased by more than half and California had advanced 82.6%. The former concentration of manufacturing is diluting. States almost entirely devoted to agriculture are beginning to industrialize.



*The development of our hydro-electric resources is changing the location of many of our important industries
Wilson Dam at Muscle Shoals*



Abundance of raw materials brought the chemical industry to the South

This tendency is evident in the the various chemical industries. Consider for example the paint and varnish industry. In that case we find the record of the five leading states which produced more than two-thirds of the paint and varnish to be as follows:

	Percent of total		
	1900	1914	1927
New York.....	27.2	21.9	16.9
Pennsylvania.....	16.2	11.0	8.9
Illinois.....	11.8	16.8	16.0
Ohio.....	9.6	13.3	11.7
New Jersey.....	8.9	11.1	14.4
Total.....	73.7	74.0	67.8

These five states held their own from 1900-1914 although New York and Pennsylvania both showed considerable decline relative to the total. From 1914-1927 four of the five decreased in importance leaving only New Jersey in the plus column. The result was a shift to other parts of the country of nearly 7% of the total value of products.

Industry's Distribution

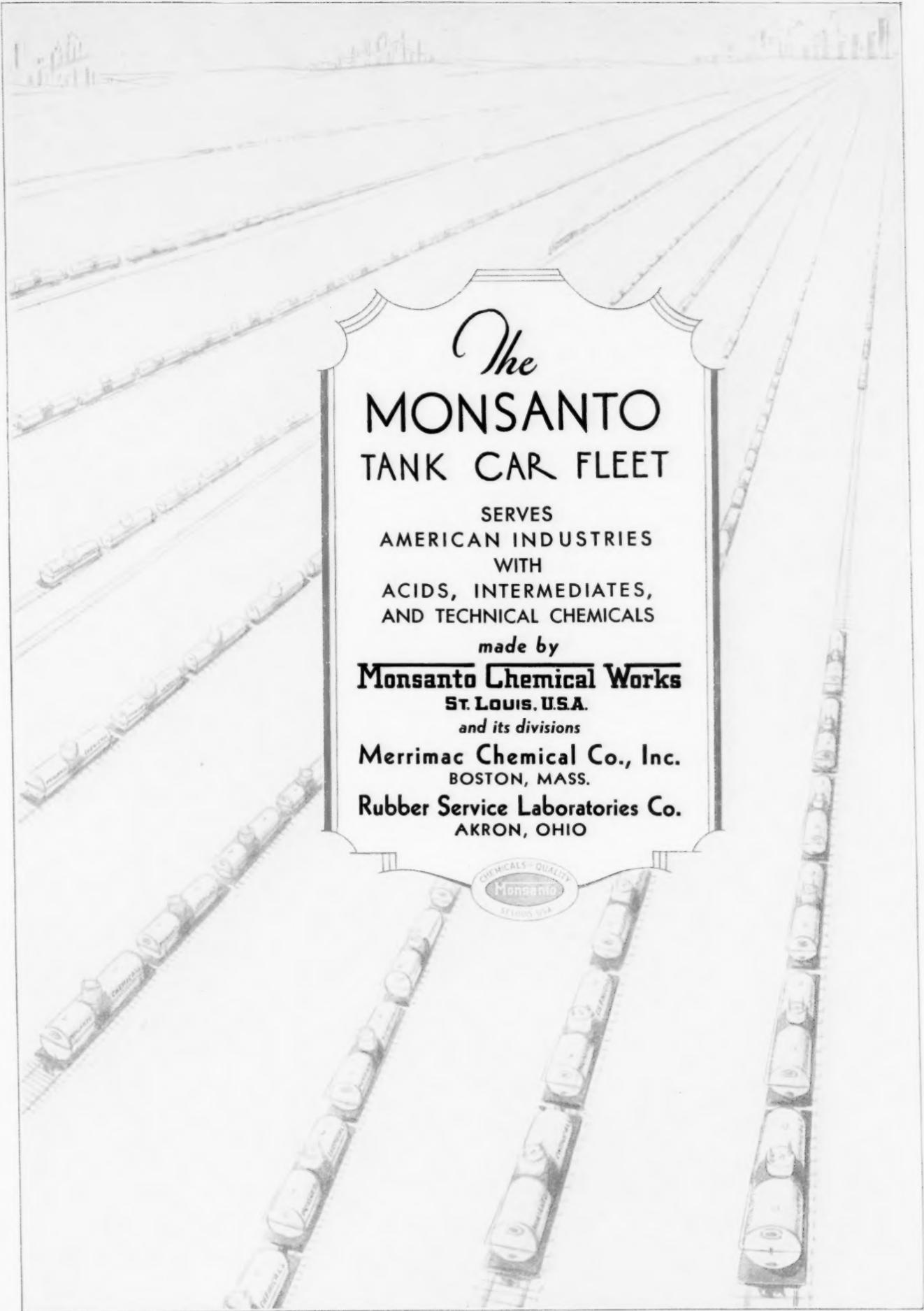
In studying the various branches of chemical industry one finds that those which require little overhead and which depend upon wide distribution to consumers are concentrated in the areas where population is greatest. For example, one-fourth of the patent medicines made are manufactured in New York state with Illinois second. The same is true of soap, and manufactured gas, and perfumes, and grease, and paints and varnishes, and cleaning and polishing preparations. On the other hand certain other industries have never been in the manufacturing area, but are near the source of supply. Michigan still leads the salt industry, Pennsylvania the lubricating oil, Illinois the glue, Texas in cotton seed oil, Georgia in fertilizer, and West Virginia dominates the carbon black industry. The general trend will undoubtedly be that those which depend on population concentration will become more and more widely distributed throughout the country as they seek to reduce freight costs. The development of branch plants and the opening of new companies will be indications of this trend.

But the shifting of industry is not merely a movement from one section to the other. Quite as important is the steady movement from city to country. No doubt but that this is a marked tendency in manufacturing in general. Between 1919 and 1925 the 25 of our largest cities lost 326,800 wage earners, about 12 per cent of the average number employed. The rural area (all towns not having a population of 10,000 persons or over) gained 55,204 manufacturing wage earners. The decline of urban activity is not limited to the larger cities. Those between 100,000 and 250,000 population showed an even greater decline of 14 per cent of their wage earners. Cities between 25,000 and 100,000 lost 11 per cent and those between 10,000 and 25,000 lost eight per cent. This trend is further demonstrated by the study of the Chamber of Commerce of the United States for 1927. In studying the cases of 228 plants which moved from one community to another there were 30 where the plant remained in a community of about the same size. In 72 cases, the plant went to a larger city and in 126, it sought a small community.

In the year of these records, there were four plants engaged in producing chemicals, tanning materials, and dyestuffs which left New York City. No chemical plants moved in. Likewise one perfumery and one writing ink plant were moved from Chicago to smaller communities with no corresponding inflow to the larger city.

The advantages which the small town can offer are usually low taxes, low rent or land cost, less freight congestion, and above all lower labor cost, in many cases due to fewer complications arising from labor organizations. On the other hand the forces of inertia keep industry in the cities. Furthermore, there is always the problem of obtaining raw materials and the difficulties of operating on a large scale in a small community. It appears that at present the forces supporting city operation are weakening, and the migration to the country is growing increasingly stronger.

A third general trend is the increased diversification of industry in single communities. One immediately thinks of Fall River, Akron, Troy, Detroit, and many other cities whose past has been almost entirely the



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CHEMICAL

Photographic Record



Elected to Presidency American Institute of Chemical Engineers, Dr. John C. Olsen, Professor Chemical Engineering, Brooklyn Polytechnic Institute

These charred ruins were all that remained of plant of City Chemical Co., Jersey City after several blasts ignited the building



Left, Dr. Robert C. White, and opposite, Harry W. Cole, Baird & McGuire, re-elected president and secretary respectively of Disinfectant and Insecticide Manufacturers Association



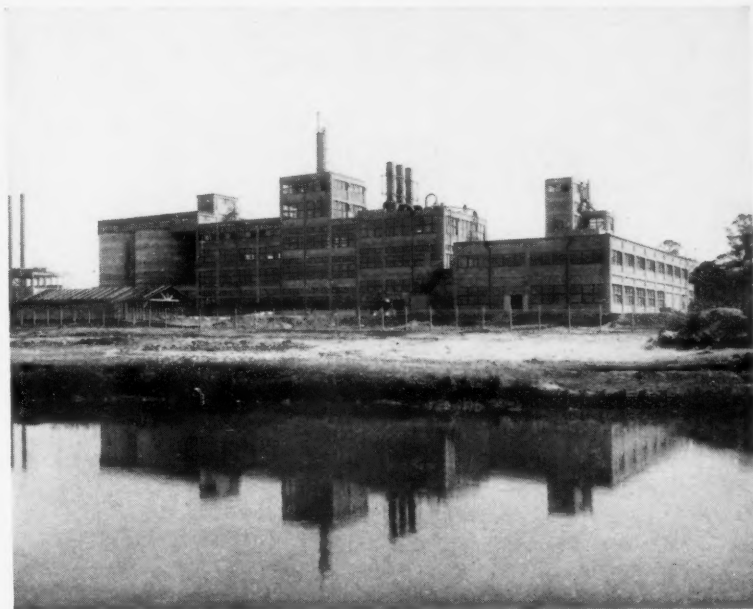
William Henry Perkin Memorial Plaque recently unveiled before the Chemical Society in England



L NEWS REEL

rd of Chemical Activities

Mass production methods in South America. New plant of the Corn Products Refining Co., at Sao Paulo, Brazil



The winner of the Nobel Prize in Chemistry, Dr. Hans Fischer, Professor of Organic Chemistry in the Technical High School of Munich



Disinfectant and Insecticide Mfrs. Association Dinner, Hotel McAlpin, December 10





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story of some one industry. Time was when such centers were completely dominated by their specialty. In most instances, however, recent growth has been in some other area so that the original center, by failing to keep pace with the growth of the industry, has lost its primacy. For example, while Philadelphia, since 1899, has more than doubled the number employed in making carpets and rugs it has dropped from 45.6 per cent of the nation's total to 27.8 per cent. In but three instances which can be found in the census, the jewelry industry, the corset industry, and the hair work industry, has any concentration come about in recent years. In fact out of 105 instances of local concentration of industries all but 10 have represented a declining percentage in recent years. Geographical concentration is on the decline.

No discussion of our industrial migration can be complete without mentioning freight rates. The distance between New York and Chicago from the executive's point of view should not be measured by miles of railroad track. The proper measure is the cost of shipping freight. To cut freight rates in half between these two centers is to move the Chicago district eastward to the Cleveland area. President Hoover has often referred to the importance of this factor in connection with his proposed developments of inland waterways. The Panama Canal and the revision of rates since the war, has moved Chicago 336 cents away from the Pacific coast per ton of stable goods while moving New York 234 cents nearer. Such a situation obviously offers a serious handicap to industry in the Middle West. The development of inland waterways will result in future changes in the freight rates map of the country. Such developments in general reduce the size of the country and add to our general economic welfare.

The three tendencies which have been outlined above all represent the ironing out of our manufacturing so that it is more evenly spread throughout the country. First there is the development of manufacturing in erstwhile agricultural areas of the country, secondly the development of rural communities as manufacturing centers and the decline of the cities, and thirdly the breakdown of local concentration in the historic centers of specialization. It is probable that all these developments make for more production by our national economy. They will cause marked savings in freight haulage and should result in less delay in shipments and deliveries.

More important from the social point of view is the fact that these developments tend to destroy the dependence of particular areas upon single types of economic activity. Diversification of industry should have the same effect as diversification of investment. It should mean less violent depression and less excited prosperity, since the various industries would not fluctuate in unison and their average would tend to be more stable than single industries. The advantages of local concentration have long been sung, but the day of diversification has come.

Foreign

The outstanding features of the month's foreign news were the number of parleys held by leading producers in many diverse industries in an effort to stabilize world prices, and the successful negotiation of several important chemical combinations of existing companies. With trade at a low ebb in practically every country in the world, it is but natural that manufacturers in each of these countries should make a determined effort to secure a larger proportional share in the export market. This has resulted in a highly competitive situation in most industries, the chemical industry included. Producers of rayon, sugar, bromine, and tin in various parts of the world met during the month attempting to reach agreements affecting production schedules and sales prices. In a few instances agreements were made, but, in most cases, very little of a definite nature was accomplished and in the rayon field the conference ended in a complete failure.

The four leading chemical producers in Italy it is finally reported have reached an accord and in the near future one large organization will control the chemical situation, occupying a position in the nation similar to the I. G. in Germany or the I. C. I. in England. Three of the largest copper companies operating in the Rhodesian field, Rhodesian Congo Border Concession Co., the N'Changa Copper Mine Co. and the Bwana M'Kubwa, are combining, the assets of the three companies exceeding \$31,250,000. The new company will control the major part of the African copper production. It is thought in many quarters that this move will tend towards greater stabilization in the price structure of the metal market.

Great Britain

London—Despite the curtailment of tin production instituted several months ago the price of the metal has continued to show marked weakness. Prices are the lowest they have been in years. Several of the larger producers are urging an additional 20 per cent reduction in an effort to bolster up the market.

C. V. Thomas, chairman, at annual meeting of Ayer Hitam Tin Dredging Co., in discussing tin restriction, said the company stopped production in August and September and since then had restricted output 20 per cent and will continue to do so until after the end of the year.

Bolivia is the largest producer of tin in South America and the weakness in the price of tin has caused serious embarrassment to that government. A commission of bankers have been at work in a desperate attempt to arrange the external loans so that the crisis may be averted.

Rayon Pact Fails

London—Leaders of the world's artificial silk industry have met failure in their attempt to stabilize prices and stave off further depression in their trade. A conference of leading rayon producers from the United States, England and four continental European nations met in London during the week of December 7 in a struggle to end price fluctuations but adjourned with virtually nothing achieved. The only result of the conference, in fact, was a valuable exchange of views and a loophole through which informal talks may be resumed some time later. The prospect of checking the downward trend of rayon prices is no better, therefore, than before the conference. Those in touch with the British rayon industry fear that prices will remain unstable for many discouraging weeks before a turn for the better occurs. Americans who were in London for the conference included L. A. Yerkes, du Pont Rayon Company; S. A. Salvage, chairman Viscose Company, American subsidiary of Courtaulds, Ltd.; and S. R. Fuller, Jr., chairman of the American Glanzstoff Corporation.

The Most Common American Mineral

Feldspar is increasingly becoming of greater importance in many industrial fields. The recent standardization of grades undoubtedly will tend towards larger consumption and new uses.

THE use of feldspar is increasing rapidly and yet, strangely, very little information is readily available concerning its consumption, and latent industrial possibilities.

Producers are handicapped to a great extent because of a lack of definite knowledge of the requirements of consumers. Consumers are, generally speaking, equally uninformed of the problems attending the mining and processing of feldspar. The problem of the producer is complicated in many ways, first because feldspar is itself a variable material; second because the impurities associated with are neither constant or uniform, and lastly because the requirements of consumers differ depending upon the use to which it is to be applied.

Feldspar is perhaps the most abundant mineral in the world. Yet in a strict sense, "feldspar" cannot, and does not, designate a specific mineral. It is merely a general term designating various rocks containing anhydrous silicates of aluminum together with potassium sodium, or calcium. The usual feldspar of commerce is of either the potash or lime-soda variety. American feldspar deposits are found along the Atlantic seaboard, the most important producing centers being Maine, New Hampshire, Connecticut,

New York, Maryland, Virginia and North Carolina. The last state has, in the last few years, assumed the position of first place; and in 1929 produced approximately 103,200 long tons or about fifty-two per cent of the total American production of 197,699 tons. New Hampshire is next, than Maine, and New York, and California both running close fourths. Of the foreign countries, Canada is of greatest importance, specially so because the greater portion of its production is exported into the United States. Norway and Sweden are large producers. Tonnages in other countries are relatively small.

Feldspar is widely used as a flux in the manufacture of glass, pottery, enamel ware, brick and tile. These industries absorb at present the major portion of the total consumption, or eighty-seven per cent, scouring soaps and abrasives seven per cent, binder for abrasive wheels two per cent, and the remaining four per cent distributed among poultry grit, roofing, stucco and other minor uses. Of the eighty-seven per cent used in the ceramics industry, thirty per cent is employed by glass manufacturers. A few of the more recent uses are in the manufacture of floor coverings, as a filler—a rather novel—but important new application is that of a flue dust arrester, in preparation of paints,



An up-to-date plant for the milling and grading of feldspar

and in the production of roofing material. Portland cement manufacturers occasionally make use of a feldspar high in potash where potash recovery is made. Alone it has little fertilizer value due to its insolubility, but that some commercially feasible process may be introduced to condition it for fertilizer purposes is quite possible. Impetus is given to this inventive thought because of our lack of extensive domestic potash resources.

The feldspar industry was severely handicapped for many years by an utter lack of intelligent operation. Mining was of the hit or miss variety with production spread among a vast number of very small companies or individuals. Naturally costs were high, the product of varying uniformity; and operations often unprofitable. The mines are usually located in mountainous localities requiring that the crude material be hauled long distances for milling.

About eight years ago the need for a reorganization of the industry became painfully apparent and specially in the North Carolina section notable improvements were introduced. Miners became millers and millers, miners. Small operations were abandoned. Production was centered at large deposits. Gradually many companies were merged and the industry concentrated. Thousands of dollars have been spent in mining equipment and railroads to afford facilities to bring large tonnages to shipping points.

Both open-pit and underground methods are used in mining feldspar. The material is brought to the surface and carried by either narrow gauge railways or aerial tramways to the shipping point. Greatly

improved methods are now utilized in milling operations. The raw material, when received, is usually assigned to bins or storage sheds care being made to accumulate stocks of similar analysis in each bin. In some plants as many as thirty to forty bins are maintained.

The rock is automatically fed into jaw crushers which reduce the material to two-inch size. A second



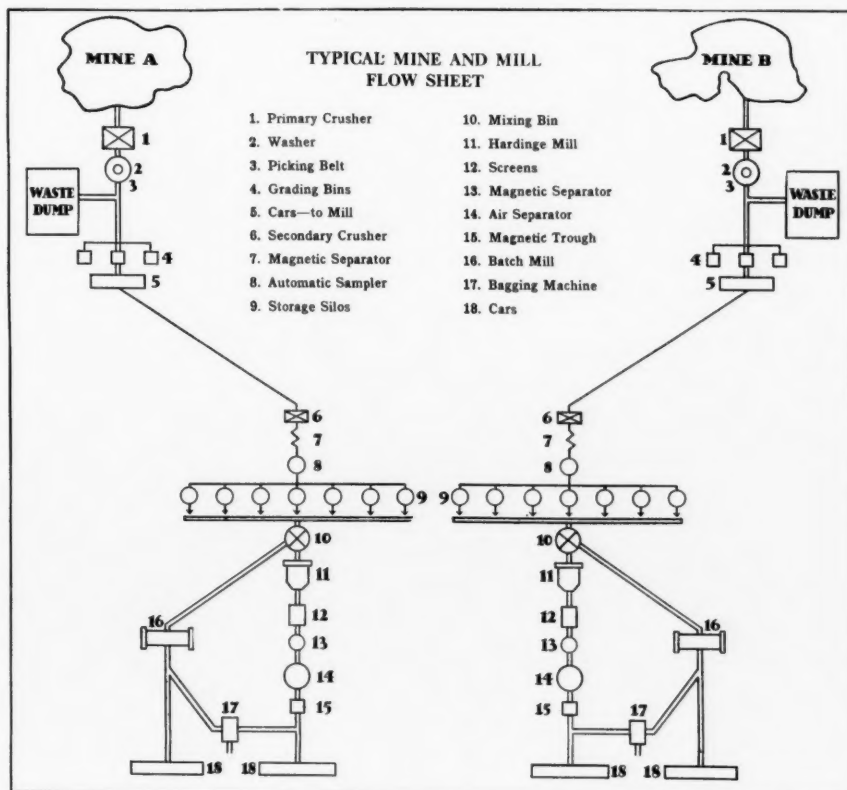
Inside of the upper level Baylis Mine at Bedford Hills, N. Y.

crusher reduces the particles to approximately half-inch, after which it is passed into a dryer usually of the rotary type. This is a most important operation as good results in further pulverizing depend largely on just the correct drying. The feldspar is then again stored and by means, usually of automatic samplers, further blending is made before the material is passed into silica lined pebble mills. Air blowers carry off the material when the required fineness has been accomplished. The entire process has now been worked on

a continuous basis. One of the more recent innovations has been the successful introduction of dust collecting systems which not only improve working conditions, but save a great deal of material which would otherwise be lost.

It is estimated that the annual grinding capacity of the feldspar mills in this country totals about 480,000 long tons. With consumption limited to about 200,000 tons, present plants are only operating at about forty-four percent of capacity. Imports account for approximately ten per cent of the total consumption of crude feldspar. Imports and their market value for the past seven years are shown in the following table:

Year	Long Tons	Value
1923.....	24,271	\$184,924
1924.....	35,139	284,716
1925.....	24,994	203,524
1926.....	29,941	251,896
1927.....	27,424	206,856
1928.....	27,857	224,920
1929.....	29,927	241,852



Courtesy Consolidated Feldspar Corp.

Imports may be changed considerably due to the new duty of one dollar a ton on crude feldspar provided in the Hawley-Smoot tariff. From 1922 to the enactment of the present law the rate of duty was thirty per cent ad valorem.

The general price trend of crude feldspar has been upward during the last twenty-five years. Prices vary



The general trend of the feldspar industry is towards the location of mills close to production centers

greatly depending upon the chemical composition and physical properties, but the average price per long ton in 1929 was \$6.46, a decrease of 27c from the prevailing price in 1928. The 1907 price was \$3.67. Imported crude in 1929, fluctuated around \$8.08 slight increase above the year previous. Ground feldspar prices averaged \$13.73 a short ton, a decrease of 82c from 1928. Pulverized spar prices were in the neighborhood of \$14.30. Prices in 1930 remained very close to these figures. Up to the present time the terms No. 1, No. 2, and No. 3 spar have conveyed only a very general meaning, and there has been urgent necessity for sharper standardization of grades. Each particular consuming channel had set ideas on grades and impurities. Manufacturers of clay material demand a very finely powdered product while glass makers appear to prefer a coarser grain. Clay material requires a 200 mesh, glass usually about 20 mesh. The great variety of needs complicates the problem considerably.

To clarify these conditions a committee was appointed by the Division of Trade Standards of the Bureau of Standards at the request of the Feldspar Grinder's Institute to draw up for consideration a set of standards. Two meetings were held, in Washington and one in Toronto; and recommended classifications were drawn up and sent to the members for approval. With the official adoption of these specifications on

September 1, 1930, considerable misunderstanding will now be avoided.

Section 1 of these Standards states that "This commercial standard classification covers ground feldspar used in the production of ceramic products, based on particle size and chemical composition. It is to be regarded as a classification rather than a definite purchase specification."

Section 2 states that all screen tests shall be made on screens of the United States standard sieve series, and Section 3 contains the following table of acceptable screening analyses.

Table I. Acceptable Screening Analyses¹

U. S. standard sieve series, number	Amount remaining on No. 200 centage on sieve, per cent	Maximum percentage on sieve, designated	U. S. standard sieve series, opening in in.
230	0.00- 0.35	1.0	.0024
200	0.35- 1.00	1.0	.0029
170	1.00- 2.50	1.0	.0035
140	2.50- 5.00	1.0	.0041
120	5.00- 9.00	1.0	.0049
100	9.00-14.00	1.0	.0059
80	14.00-21.00	1.0	.0070
60	21.00-30.00	0.6	.0098
40	30.00-42.00	0.3	.0165
20	42.00-62.00	None	.0331

¹This fineness classification shall be made on a basis of the percentage remaining on the standard 200 sieve and that remaining on the sieve designated. Example: 140 sieve product will have 2.5 to 5.0 per cent remaining on the 200 sieve and less than one per cent on the 140 sieve.

Section 3 includes also the chemical classification, based upon composition as it influences use, and describes three groups.

The first covers ordinary ceramic or body grades based on silica content and alkali ratio, and containing less than 4 per cent soda (Na₂O) content. The num-



Location of principal feldspar producing centers in the East Courtesy Manufacturers Record

Dynamic Competition

Standardized Production Technique Forces Changes in Sales Methods

THE pressure of too-keen competition, if equalized at one point, exerts itself in another direction—an economic phenomenon common in chemical process fields where plant processes and sales methods are both competitive factors. The oil industry, for example, is most highly competitive, and this accounts for some outstanding developments which by analogy teach a valuable lesson to chemical executives struggling with similar problems.

During the last decade all of the petroleum refining companies have modernized their refinery equipment. This equipment, with few exceptions, cannot be monopolized and is generally open on equal terms to the entire industry.

Until very recent years there were wide differences in refinery methods, with correspondingly wide differences in economy of operation. All of the really important differences in refinery operation have now been levelled down, so that to-day it is more true than ever that refinery operations, by themselves, do not show a profit. At least it can be said that practically all refiners are on an even competitive basis so far as technical methods are concerned.

Several examples will make the above generalization more evident.

Crude Distillation

About ten years ago pipe stills run in connection with efficient fractionating columns of the "bubble tower" type began to be installed. This type of equipment operated at much higher fuel efficiency and gave higher yields of light oils and often eliminated a good deal of re-running. The wide-spread installation of this type of equipment gave the industry, directly or indirectly, a saving or additional income, of at least a hundred million dollars per year. This saving, on the basis of a comparison with former practice was, of course, not actually realized in coin, because the same equipment and methods were rapidly adopted gener-



By
Benjamin T. Brooks

ally. In some cases old shell still batteries were rebuilt to improve their fuel efficiency and equipped with proper fractionating equipment so that a refiner operating on changing sources of crude (not well suited to pipe still practice) was able to nearly equal the efficiency of a good pipe still-bubble tower set up.

Much the same change in method and equipment has taken place in the distillation of the heavier cuts, gas oil, and lubricating oils. Large pipe still units coupled with large bubble towers, operating on reduced crude under vacuum, have greatly increased the yield and improved the quality of lubricating oils. It has long been true

that refiners could produce more lubricating oil from the same crude runs, and here the real problem has been one of distribution and sale. However, most refiners have been compelled to install such equipment to stay in the race with their competitors. The result is that the market is glutted with lubricating oil. This is particularly well illustrated in the case of the heavy lubbers and bright stock.

The installation of vacuum distillation required, in most cases, the installation of centrifugal machines to de-wax these oils. Until about two years ago, the manufacture of bright stock was a profitable specialty for certain refiners who were able to produce it. It is now very widely produced, and three Oklahoma refineries now have more than 200,000 bbls. of unsold refined bright stock on hand.

Cracking Processes

There has been a steady improvement in cracking processes since the perfection of the simple Burton still. There is now very little difference in the profit that can be made by the three or four best cracking processes. Save only one all operate on a royalty basis which was fixed in the days when gasoline, f. o. b. Mid-Continent refinery, bought 10 to 13 cents per gallon, and before the cracking capacity of American

refineries, plus the supply of straight run, had exceeded the gasoline requirement of the country. The Winkler & Koch system carries no royalty but users are being sued for infringement, both by the Universal Oil Company and the so-called Patent Club.

Companies engaged in selling cracking equipment, or who live on the royalties of such processes, have encouraged small refiners to install cracking plants. Larger refiners have also increased their capacities to such an extent that in conjunction with the present oversupply of crude, gasoline is overproduced. Accordingly only the most modern and most efficient cracking plants can make even a small profit. Small cracking units are therefore not money makers, as they commonly were in 1922-1927; but have become comparable in their economic aspects to the generally unprofitable isolated skimming plants.

Other Refiner Economies

Other refiner economies quite generally installed in recent years include systems for the recovery of gasoline vapors from refinery gases; the substitution of closed continuous treating for open agitator treating of light oils; direct ammonia refrigeration for lower cold test oils; elimination of steam re-running of gasolines, naphthas, etc.

As a natural result of all this levelling out of technical advantages in the refinery has come the recognition by far-sighted executives that an oil company must look to other sources than the refinery itself for its dividends, and they are paying strict attention to such things as:

(1) Crude production, which virtually means either continued production from old wells whose cost has been completely written off, or flush production from new wells.

(2) An advantageous geographical situation as regards crude supply, refinery, and the distribution of products to consumers.

(3) Control of distribution of refinery products so that the company gets the integrated profit of refiner, distributor (tank wagon) and filling station. These considerations have led to a tremendous and costly struggle for control of distributing systems. This, with the natural effort of every refining company to control its own crude supply, or at least the major part of it, has led to the building up, by merger or purchase, of so-called "completely integrated" companies.

(4) Specialty products which are now being very actively sought. They are products not made by all refiners and in the ideal case, the manufacture is monopolized either by patent control or by accumulated skill and experience. The manufacture of artistic candles by the Standard Oil of Indiana is an excellent case of the latter type. The manufacture of ethylene glycol or "Prestone," of cellosolve, of ethyl alcohol, acetone and a series of related chemical products from oil gas is very profitably monopolized,

thus far, by the Carbide and Carbon Chemicals Company. Logically this development should have been carried out by an oil refinery; few refineries can show the profit of this carbide plant at Charleston. However, such a worth-while and adequately protected specialty business can only be acquired by purchase, or developed by research, both very costly and quite beyond the possibilities of a small refiner.

The manufacturer of solvent alcohols for the lacquer industry, by the Standard Oil Company of New Jersey, the manufacture of Nujol and the acquisition of Daggett and Ramsdel, famous makers of branded cold creams, and the manufacture of "Flit" is evidently a recognition of the possibilities of profit in the specialty business. The acquisition of an excellent domestic oil burner and the sale of domestic furnace oil, belongs at this time in the same category; but there are indications that this household fuel market will in a very few years become thoroughly standardized.

France

Paris—The resumption of negotiations in the attempt at world-wide curtailment of sugar production was blocked by the continued illness of Thomas L. Chadbourne who has been the moving spirit in the plan for the past six months. The chemical industry is closely watching the parley. Alcohol producers fear any reduction of sugar acreage will result in higher prices for scrap molasses. The German delegates it is reported are still unsatisfied with the proposals.

Germany's problem is complicated by the fact that she has an exportable surplus estimated at 850,000 tons. Mr. Chadbourne offered the German delegates at Brussels an annual export quota of 200,000 tons for five years, but they countered finally with a demand for 450,000 for the first year and 350,000 for each of the four succeeding years. The conference collapsed when the Germans refused to reduce their demands and took the next train to Berlin.

As the month ended attempts were being made to bring about a compromise satisfactory to the German interests.

Statistics on production and consumption of rayon yarn according to the Syndicate of French Silk Manufacturers at Lyon, are as follows:

	1928	1929
	<i>Kilograms</i>	
Approximate French production.....	18,000,000	25,000,000
Imports.....	519,000	382,000
	18,519,000	25,382,000
Exports.....	5,120,000	6,176,000
Remained in France.....	13,399,000	19,206,000

National Industrial Nitrogen Office—the ammonia plant operated by the French government—now has a monthly production of 10,000 metric tons of ammonium sulphate and 1,000 metric tons of ammonium nitrate and compound fertilizers having an ammonium nitrate base. It is the most important synthetic ammonia plant in France.

The French potash and chemical interest, "Fabrique de Produits Chimiques de Thannet de Mulhouse," is increasing its capitalization to 15,000,000 francs. The capital increase will enable the company to expand its production of chloride of potash through its affiliated concern, "Societe Produits Chimiques des Terres Rares."

Predetermine Distribution Costs

To too great an extent present day accounting practices lock the stable door after the horse is gone. A little foresight is often translated into a better product and a greater profit. In the third and last of this series, D. A. Wilcox shows how to arrive at proper distribution costs in a really scientific way.

ACCOUNTING, whether cost or otherwise, is of limited value except as it enables us to plan intelligently for the future. Certainly expense accounting, or retrospective accounting, is necessary so that we may know what we owe and what is owed to us and what our profits were, and what our financial position is as of any certain date. This is all very important but it is static and not, of itself, of great assistance in active management. What has happened is gone and beyond control—what is happening and what is likely to happen in the future are the things which are important to know if we wish to reduce expenses and make a profit.

Accounting should, therefore, furnish us with the essential elements of past performances which we require, but, most important, it should provide the necessary background by which we can make intelligent plans and it should enable us to check current operations against our plans as we progress.

Distribution Costs

So far we have considered accounting chiefly from the producing or mill standpoint. This is natural because that is where cost accounting has made the greatest developments and it is the phase with which we are most familiar. When an article is produced, however, the work is only half done. To be of benefit to us we must dispose of it, and it is in the field of distribution and administrative costs that accounting has the greatest future and can be of greatest use under present conditions. While this is receiving constantly greater attention the surface has just been scratched and we can expect many important developments in the line of distribution accounting in the near future.

Distribution costs vary quite a lot in different industries, as would be expected, and may represent anywhere from a relatively small percentage of the sales dollar to well over 50% in some cases. If we were to consider the matter as a whole and take the



entire distribution costs from the producer to the ultimate consumer we would find that in many industries they represent a much larger element of the total cost than is now suspected. It is only fair to consider the matter in this light because no matter how we sell, whether direct to consumers or through agents or jobbers the expense is there and decreases our profits accordingly.

Due to increased competition and continual decrease in factory costs an ever increasing effort is being made to hold our normal volume of sales or to increase it. This extra effort causes extra expense and, as the law of diminishing returns begins to operate, may go up out of all proportion to the results secured. There comes a time, therefore, when increased volume is secured at a premium which costs more than it is worth.

The Profit-graph

For every plant or company there is some best combination of price and volume. This can be determined roughly by graphic means and affords a valuable check on future plans for expansion or sales policies. For this purpose we make use of a very useful chart known as the "profit-graph." This is shown in Figure 1.

The general principle of this graph is to build up by graphic means a line to represent the total expense for various percentages or normal operations and another line to represent the receipt from sales at the same volumes. The distance between the two lines represents the profit or loss at that particular volume.

In the chart shown here the horizontal distances represent percentages of normal volume and the vertical distances total dollars for a period, usually of a year. The line D-E represents the fixed overhead and is, of course, always the same for all volumes of sales. Starting at D we plot the variable charges which, in this case are presumed to vary directly with the volume, the height between D-E and D-F representing

the amount of the variable charges and the line D-F is the total cost at any volume of business.

If we draw the line O-B representing the volume of sales times the sales price it will represent the total receipts from sales at any desired volume. The height between O-B and D-F will then represent the profit or loss at that particular volume, being a loss when O-B is below D-F and a profit when it is above.

Suppose now that we are selling 80% of capacity at present at an average price of \$3.00 per unit. The salesmanager believes that if we reduce the price to \$2.00 we can increase our volume to over 100% and thus increase profits. We should like to see how this would work out.

We draw the line O-B representing the sales at \$3.00 and see that at 80% we should make a profit of \$500,000.00 per year. We next draw line O-C representing the sales at \$2.00 and immediately see that we would have to project the volume to 160% in order to make the same profit as we are making now. Both the salesmanager and the production manager agree that it would be impossible to achieve this volume.

As a matter of interest we now draw the line O-A representing the sales at \$4.00 and find that with this price we would make our present profit if we could hold 53% of capacity. The salesmanager believes that sales would not drop that much so we see that if any adjustment is required at all in the prices it would be better to increase them and reduce volume than to

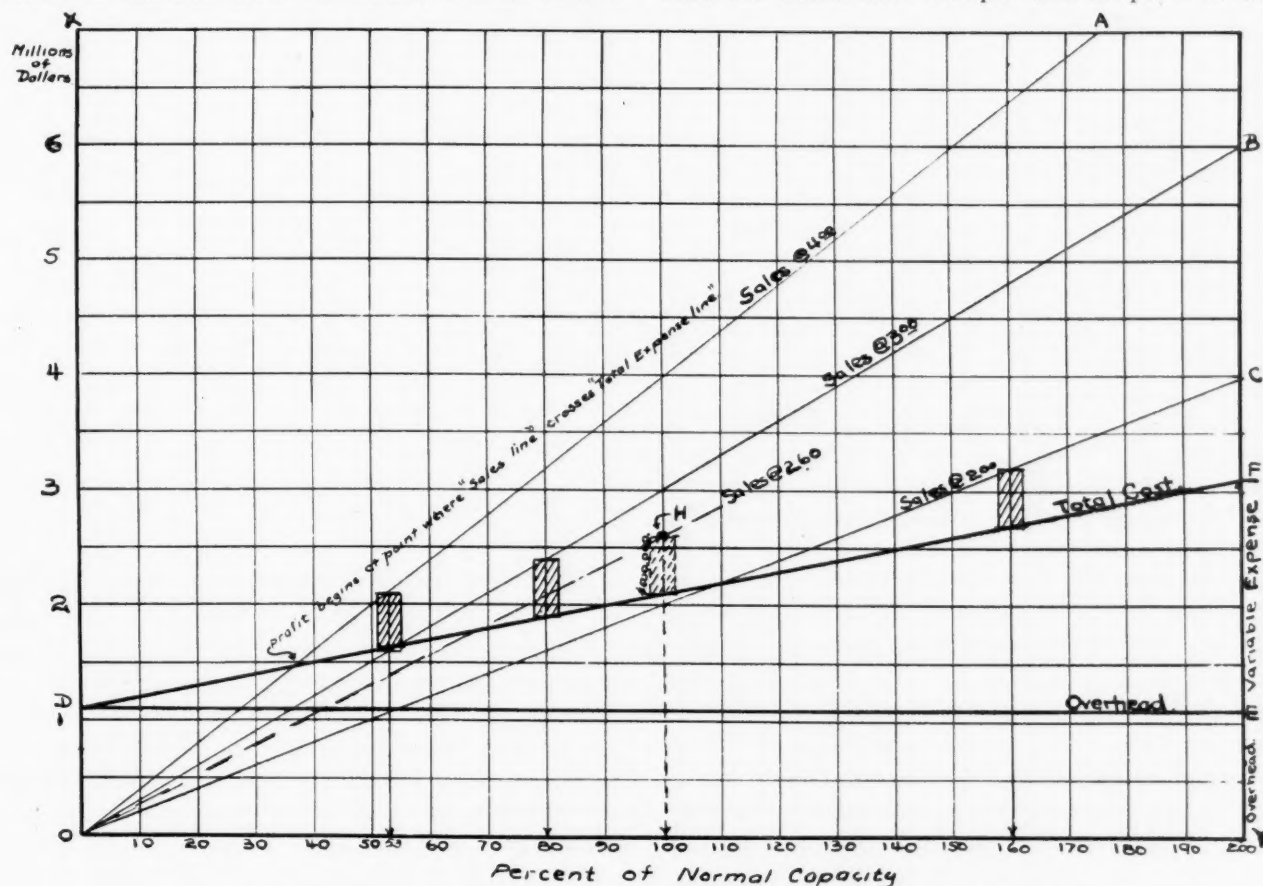
decrease them and attempt to increase volume sufficiently to offset.

We would like to know what price we could afford to sell for if we ran at 100%. To secure this we proceed as follows: At 100% we rise vertically a distance equal to our present profit and locate the point H. We then draw line O-H. By proportion we see that at 100% sales @ \$4.00—\$4,000,000 and as H is at \$2,600,000 the unit price must be \$2.60, which is the price to which we could drop and secure our present profit at 100% volume.

If our price is fixed we can read from the chart the various effects on our profits resulting from different volumes of sales. Combined with a forecast of sales conditions and a knowledge of general business conditions we can foretell many valuable and interesting facts from this chart.

Saturation Point Chart

The quest for volume costs ever more and more money. Up to a certain natural "saturation point" for the product of each particular company sales volume may be increased normally at a fairly definitely fixed sales cost per unit, but when this point is reached, and possibly passed, we must increase our efforts—and expense—to secure more volume. We must add bonuses to commissions, increase advertising, supply dealer aids and otherwise add to the sales expense. Thus the distribution cost per unit is apt to be the



The "Profit-graph" which makes it easy to tell when the selling price begins to be profitable

reverse of the production cost, a parabolic curve pointed the other way.

It is very wise to have this curve plotted covering a period of, say, ten or more years. If the point has been reached where the distribution cost per unit has commenced to leave a flat line and become curved upwards the danger point has been reached and the need for a careful analysis of the distribution costs is indicated. If this point has been reached or passed only the most careful control of distribution costs will prevent them from rising out of all proportion to the gain in volume attained and it may be even better to forego the quest for more sales due to the fact that they may actually only be secured at a loss.

Analyzing the Distribution Costs

What then constitutes an analysis of distribution costs? This differs from the manufacturing costs insofar as, instead of being confined to two major aspects, the functional costs and the unit product costs, there are many different ways of looking at distribution costs a few of the principle ones which may illustrate the point are as follows:

1. (a) What percentage of the total sales dollar goes to distribution costs?
(b) The same information for particular classes of products.
2. What are the *unit* distribution costs for each principle product?
3. What are the distribution costs by percentage of sales for various territories?
4. What percentages of the sales are selling costs for each sales branch and salesman?
5. What are the percentages of sales for distribution costs by principle customers?
6. What is the relationship between distribution cost and size of orders?

In each case we take the total distribution costs and shuffle them up and then distribute them on a different basis. Thus in each case the total expenses are entirely distributed, but on a different basis. This may seem confusing at first, because it makes it appear that we get different costs for the same article depending upon how we look at it, but in reality it means that each basis is to be considered as an individual problem and must not be confused with the others.

Take items 2 and 5 and let us say we have, as elements of distribution expense out freight and cartage, salesmen's expense (including commissions, traveling expense, etc.), warehousing expense and accounting expense.

In the case of the unit distribution costs by products (item No. 2) we might average all these expenses over all the lines on the theory, as with freight for example, that while most of this product does go but a short distance and thus has low freight charges, it might be sold anywhere, and hence the fact that *it is* sold nearby is more or less accidental and not a good

reason for only charging it with the low freight charge. Thus the fair way is to average all general charges of this nature over all the products, but to charge to the particular products, in this case, all expenses, such as special advertising, which are incurred especially for its benefits.

Analysis by Territories

When, however, we consider the case of the analysis by territories we may average many of the expenses considered direct in the previous case but charge direct in this case expenses due to the particular territory such as freight, traveling expense, storage and warehousing charges and the like so as to get the cost of selling any product in this territory.

Different companies find different types of analysis of varying importance to their particular problems depending upon the nature of their sales problems. Concerns producing and selling on a mass production basis, such as soda ash, lime and other heavy chemicals, have an entirely different problem than those who sell in small lots. Firms dealing through agents and jobbers have different problems from those maintaining a large salesforce and branch offices. It will be worth while, therefore, to consider each of the types of analysis noted above to see the general objects of each.

Analysis on the Sales Dollar

The analysis of the sales dollar, in total and by-products, is, first to show whether or not we are approaching the saturation point and is a general danger signal to show when and on which products it begins to cost more to secure additional volume than it is worth. It also shows the particular products which need special care in this matter.

Unit distribution costs by products is for aid in setting sales policies. The return from sales, if a business or any branch of it is to succeed, must be sufficient to include all the expenses connected with the production and distribution of it together with a sufficient margin to cover a fair share of the general expenses and a profit. It is impossible to know whether this is being accomplished or not if the distribution costs are not analyzed according to products and compared with the sales price.

Distribution costs by territories is valuable in knowing what are the natural markets for the products. It is useless to attempt to force a market and much money has been lost in attempting to do so. It is of particular interest where a company has several factories making the same products and can be used in scheduling orders from certain territories to the various plants according to their most economical territories. Still another advantage lies in the fact that the sales saturation point may be quite different in different territories and while it may be useless to attempt to

increase volume in a certain product in one district it might be perfectly possible to do so economically in another.

A record of distribution costs by branches and salesmen is a necessary element of the control of the sales department. It is by no means sufficient that a man should be a good salesman—he should be a profitable salesman.

Distribution Costs by Customers

Analysis of distribution costs by customers is often enlightening. Some customers "get away with murder" in the form of special terms, collections and so forth and, aside from the credit situation, it is sometimes better to reject an order than to encourage a particular customer in practices which are unprofitable to the house. Such items as numerous calls for samples, many small lots, special runs, special sorting, excessive advertising and dealer aids, and so on all cost money and tend to make the particular customer demanding them an unprofitable one. Customers, just like salesmen, will abuse a good thing if they feel that there is no check being kept on them.

The last mentioned item is the relationship between large and small orders. Often too little attention is paid to this and when it is appreciated that there is a very definite fixed cost per order, whether large or small, in addition to the items which vary with the size of the order itself, the importance of this factor may be appreciated. Such fixed costs include such items as the accounting costs and clerical work incident to entering and filling and billing an order, certain elements of packing, warehousing and other charges, and in some cases special costs in the factory incident to making the order, such as set-up time and the like. It is well to have this fixed cost before us, because any order which approaches it, or is below it, in size will certainly be sold at a loss instead of a profit. Aside from the matter of knowing what these fixed costs are so as to set policies as regards accepting or refusing small orders, we may desire to accept any orders, no matter how small, but to charge a differential on the small orders sufficient to assure their being profitable.

Other Analyses Possible

The list might be extended to considerably greater length, but other forms of analysis will naturally suggest themselves when the problem of distribution costs is considered at all and need not be entered into here.

Just as in the case of factory accounting the best way to control these costs is by means of the budget and by definite standards for each element. Only by setting such standards and having a fair basis of comparison between what the costs are and what they should be can the problem be attacked at all.

In concluding this series of articles we should like to summarize briefly a few of the outstanding points we have attempted to make.

As the reports are the principle means whereby the management can keep in touch with and control the business it is essential that they be as accurate and as clear as possible. It is the business of the accountant to secure this information and present it in a useable form. He should be qualified, both in accounting and technically to do this and must be an integral part of the management itself in order to be fully informed as to their needs. On the other hand the management should appreciate the possibilities of accounting and see to it that they receive from it the full aid which it can give them.

Standard costs are the correct costs on which to base selling policies and are, at the same time, the means of controlling expenses in the most practical manner.

A budget is an exceedingly useful tool of management when properly set up and operated and enables the management to foresee the probabilities, and to work out his problems in advance and with calm consideration instead of being forced to do so when they become acute and under great pressure.

Uniformity of costs within an industry is an important element of safety to all members of the industry and this is particularly true of the chemical industries.

Accounting is chiefly valuable as it provides a guide for future operations. A study of distribution costs is important and valuable.

• • •

Chemists' Club (N. Y.) membership committee announces that applications for both resident and non-resident memberships have continued in substantial numbers during the period when the Club has been partly closed for extensive improvements to the building and for the addition of new facilities. As the time for re-opening the Club approaches, indications point to a sizable waiting list for both classes of membership. It is suggested that those who are eligible for membership and wish to become members should, make application for membership immediately. The dining facilities are now available. Work on the lounges is progressing satisfactorily and is expected to be fully completed within a month or six weeks. A tour of inspection reveals the startling changes and improvements that are being made. Of these, the most important is the renovation of Rumford Hall and its change of status to that of main lounge.

• • •

Prof. Arthur E. Hill of New York University has been elected chairman of the New York Section of the American Chemical Society for 1931. He succeeds Dr. J. G. Davidson of the Carbide and Carbon Chemicals Corporation. Prof. Hill became an instructor in chemistry at New York University in 1904, and has been a full professor and head of the department since 1912. He is a native of Newark, N. J., and a former professor of chemistry in the New Jersey College of Pharmacy. During the World War he was research chemist in the Chemical Warfare Service. He received the degrees of B. S. and M. S. from N. Y. U., and a Ph. D. from the University of Freiburg. Prof. Hill has been chairman of the Division of Physical and Inorganic Chemistry of the American Chemical Society, and is now an associate editor of the Journal of the Society. He is a former councillor of the New York Section, and is the author of numerous books and treatises on chemistry.

Chemical Chronology 1930

JANUARY

John Lucas & Co., pioneer paint manufacturers, is merged with Sherwin-Williams. ¶ Synthetic Organic Manufacturers Association re-elects August Merz president. ¶ Senate lobbying committee calls on Herman A. Metz to explain contributions to campaign fund of Senator William H. King (Utah). ¶ Dr. Herbert H. Dow receives Perkin Medal. ¶ American Cyanamid buys the Beaver Chemical Corp., Damascus, Va., manufacturers of sulfur dyes and alizarines. ¶ Kalbfleisch, Cyanamid subsidiary, acquires Central Chemical Co., Kokomo, Ind., manufacturers of aluminum sulfate. ¶ John A. Chew elected vice-president Federal Phosphorus Co. ¶ Severe price reductions in methanol features a rather dull chemical market.

FEBRUARY

Canadian Industries, Ltd., constructs new sulfuric plant at Copper Cliffs, Northern Ontario. ¶ American Cyanamid central figure in an imposing group of mergers including Chemical Construction, Lederle Laboratories, Passaic Color, Garfield Aniline. ¶ Kalbfleisch, Cyanamid subsidiary, acquires Jarecki Chemical, Superior Chemical and Superior Bauxite. ¶ Union Solvents announces the production of acetone and butyl alcohol. ¶ William B. Lawson, prominent for many years in International Nickel, is elected vice-president Harshaw Chemical Co. ¶ Dow Chemical Co. issues \$3,500,000 10-year 6% sinking fund notes to finance future expansions. ¶ William H. Nichols, chairman of the board, Allied Chemical & Dye Corp., dies in Honolulu, February 21st, aged 78.

MARCH

DuPont secures control of Roessler & Hasslacher. ¶ Selden Co. loses phthalic anhydride patent suit to Barrett. ¶ Dr. Milton C. Whitaker leaves private consulting practice to head new American Cyanamid subsidiary, Catalytic Process Corp. ¶ Dr. Jules Bebie, director of research, Monsanto Chemical Works, resigns after twenty-five years of distinguished service. ¶ Tariff bill passes Senate and goes to the conference committee. ¶ Standard Oil and I. G. form company to take over rights to new hydrogenation process. ¶ Westvaco and United Chemical Industries of U. S. S. R. sign contract for technical assistance in production of liquid chlorine in Russia.

APRIL

Plans are formulated by Newport to acquire International Printing Ink. ¶ Cyanamid Company continues expansion program further with the purchase of Wetterwald & Pfister, Wattersol Dyestuffs, Dye Products and Chemical. ¶ Carbide and Carbon Co. begins production of synthetic ethyl alcohol at Charlestown, W. Va. ¶ Hydro Patents Corp. is formed by Standard Oil-I. G. group to license prospective users of the hydrogenation process in this country. ¶ Preliminary plans are made for new Chilean nitrate holding corporation as international conference fails to form world cartel. ¶ Continued large volume of alkali shipments encourages chemical industry. ¶ Market value of chemical stocks declines \$193,752,000 on N. Y. Stock Exchange during April.

MAY

Rossville, General Industrial Alcohol, and American Solvents are merged with H. I. Pfeffer as chairman of the board and V. M. O'Shaughnessy as president. ¶ Williamson Bill transferring work of Bureau of Prohibition to Department of Justice is signed by President Hoover. ¶ Swann Chemical Co. is formed by the consolidation of seven companies with Theodore Swann as president. ¶ Compania Salitrera Nacional (Cosana) is to control production and sale of Chilean nitrate. ¶ I. G. declares extra dividends on both common and debentures. ¶ Newport offers additional common at \$20 a share. ¶ Du Pont issues new stock to stockholders at \$80 a share. ¶ Proposed new tariff increases chemical rates by 2.18 per cent. ¶ William J. Matheson, organizer and former head National Aniline, dies May 15th.

JUNE

Edwin M. Allen, L. H. Baekeland, Herbert H. Dow, Pierre S. du Pont and George Eastman are nominated for the Chemical Markets Medal, celebrating 15th anniversary of this paper and 10th of Williams Haynes ownership. ¶ Royal Dutch enters into new hydrogenation process agreement. ¶ Hawley-Smoot Tariff Bill is signed by President Hoover, June 17th. ¶ Manufacturing Chemists' Association elects Warren N. Watson secretary to fill vacancy caused by John I. Tierney's death. ¶ G. Lee Camp, former Dow sales manager joins Monsanto as assistant to the president. ¶ Ernest K. Halbach succeeds Col. Herman A. Metz as president, General Dyestuffs Corp. I. G. purchases control of Mont-Cenis nitrogen producing process. ¶ International Salt issues 240,000 new stock shares. ¶ Chemical activity continues to decline with calcium chloride and copper sulfate sales alone holding close to normal. ¶ Deaths, John D. Gillis, managing director Graesser-Monsanto in London: Dr. Harvey W. Wiley, on June 30th, aged 85 years.

JULY

Chilean government formally announces formation Chile Nitrate Co., (Compania de Salitre de Chile). ¶ Barrett Co. decree in suit against Selden Co. for infringement of

anhydride patents is upheld by U. S. Circuit Court of Appeals. ¶ Dr. L. F. Nickell, assistant vice-president, Monsanto Chemical Works, is elected chairman of the board of Graesser-Monsanto. ¶ Further important personnel changes are the election of Berthold A. Ludwig to the presidency of National Aniline and J. T. Fetherson to the presidency of Selden Co. ¶ Copper reaches 11 cents, the lowest figure for 28 years. ¶ Texas Gulf Sulphur duplicates during the first six months its earning figure for the first half of 1929. ¶ Colgate-Palmolive-Peet net profit for first six months is 19% greater than the previous year. ¶ American Glue Co. calls meeting of stockholders to ratify sale of abrasive divisions to the Carborundum Co.

AUGUST

Bureau of Industrial Alcohol publishes proposed new regulations. ¶ George F. Hasslacher resigns from Roessler & Hasslacher and is succeeded on the board by Dr. Edward A. Rykenoer. ¶ Hercules Powder curtails production of its naval stores divisions ten per cent. ¶ John M. Queeny returns to this country after several years' residence in England. ¶ Total exports of chemicals for first half of 1930 are 12 per cent below the figure for 1929. ¶ Metallic copper, ethyl acetate and tartaric acid are lower. ¶ International Nickel lists 825,815 new shares of stock. ¶ Freeport Texas increases board from ten to fifteen members. ¶ John M. Wing, formerly vice-president, Wing and Evans, dies August 2nd, aged 70 years.

SEPTEMBER

Pierre S. du Pont awarded Chemical Markets Medal by vote of the industry. ¶ Canada increases tariff rates on several important chemical products. ¶ Stanley H. Monilaws, general manager Aikman Ltd., London, becomes European manager for Barrett Co. ¶ Per K. Frolich, Standard Oil Development Co. is awarded the Grasselli Chemical Medal. ¶ American Chemical Society meeting at Cincinnati has record attendance. ¶ Nitrate cartel holds first meeting in Paris to determine production quotas. ¶ Chemical Foundation presents check to the National Health Institute for \$100,000 for basic chemical research in public health problems. ¶ Copper falls to 10 cents a pound, the lowest figure prevailing for the metal since 1896. ¶ American Cyanamid Co. passes quarterly dividend. ¶ Industrial activity fails to make any important seasonal gains. ¶ Deaths: Daniel Guggenheim, outstanding copper pioneer, September 28th, aged 74; Fred F. Smith, assistant director of sales, Hercules Powder, September 6th, 48; Charles Robinson Smith, a founder of the General Chemical Co. and a leading spirit in the formation of the Allied Chemical and Dye Corp., September 10th, 76.

OCTOBER

American Cyanamid and Columbia Chemical Co. enter into an agreement to construct new alkali plant on the Gulf Coast. ¶ John W. Boyer, vice-president

Monsanto, resigns, and is succeeded by G. Lee Camp, assistant to Edgar F. Queeny, president. Cyanamid Co. arranged for the construction of first unit of new superphosphate plant at Tampa at cost of \$2,500,000 when completed. ¶ Du Pont begins production of cellophane in new plant at Amphyll, Va. ¶ Suit of Arnold Hoffman & Co. against Mathieson is settled out of court. ¶ Arthur D. Little is awarded the Perkin Medal. ¶ Col. William C. Procter is elected chairman of the board of Procter & Gamble. ¶ Willard H. Dow is elected president Dow Chemical Co. ¶ American Agricultural Chemical Co. calls for redemption by February 1, 1931, first refunding mortgage 7½% bonds. ¶ Acetate of lime and copper salts again lead in price declines. ¶ Deaths, Dr. Herbert H. Dow, Dr. Ellwood Hendrick, Lord Brotherton, George S. Davis, one of the founders of Parke, Davis, and Henry D. Whiton, president and treasurer Union Sulphur Co.

NOVEMBER

American Cyanamid Co. buys A. Klipstein. ¶ J. H. D. Rodier, a vice-president of Grasselli, resigns after forty-four years of service. ¶ Horace Bowker, president American Agricultural Chemical Co., organizes the Chemical Division of the Emergency Employment Committee. ¶ American Manganese Producers' Association files brief against Russian manganese ore imports. ¶ Anglo Chilean Corp. shows over million deficit for year ending June 30th. ¶ Highly competitive conditions force reduction of 40 cents per hundred pounds on the contract price of liquid chlorine. ¶ Deaths, T. Coleman du Pont, Dr. Richard Moldenke, noted metallurgical expert, Sidney M. Colgate, chairman of the board, Colgate-Palmolive-Peet, Sumner W. White, director, Mutual Chemical Co. of America.

DECEMBER

Government announces the substitution of methanol as a denaturant for alcohol by alcotote, a non-toxic petroleum distillate. ¶ Bureau of Mines reports favorably on use of methanol as an anti-freeze for automobiles. ¶ Mallinckrodt opens factory in Canada. ¶ American Institute of Chemical Engineers in session at New Orleans elects Dr. John C. Olsen, president. ¶ Prof. Moses Gomberg, University of Michigan, chosen president American Chemical Society and L. V. Redman, Bakelite Corp., elected vice-president. ¶ New attempt at Muscle Shoals agreement fails. ¶ Solvent market again weakens with marked reductions in ethyl and butyl acetate and butyl alcohol. ¶ Liquid chlorine is reduced quarter of a cent under contract. ¶ Stocks are much lower with the principal chemical companies registering new lows. ¶ Benjamin L. Murray, chief chemist, Merck & Co., dies December 12, aged 61. Lord Melchett dies December 27th, aged 62.

Selenium

Its Properties and Uses

By R. M. Santmyers*

SELENIUM at the present time is receiving considerable attention with the purpose in mind of developing new uses of large tonnages. Because of the restricted present-day demand, the sales represent only a small fraction of the potential output. In the United States alone the potential production of selenium, virtually as a by-product of major metallurgical operations, has been estimated at 400,000 to 450,000 pounds annually.

Selenium lies closer even than sulfur to that ill-defined border line between the metals and non-metals. Oxygen, sulfur and selenium exhibit allotropism. Oxygen occurs most abundantly, sulfur and then selenium next. They all produce hydrogen compounds of the same type, but while the hydrogen compounds of sulfur and selenium are fetid smelling gases at ordinary temperatures, hydrogen oxide (water), H_2O , is a colorless, odorless liquid.

Selenium is an essential constituent of several minerals. The commercial source, however, is the relatively minute amounts present as impurities in various ores, and recovered as by-products in the refining of copper and lead and from the manufacture of sulfuric acid from pyrite. The quantities recovered in this manner could be largely increased if the demand warranted the slight additional expense of working up certain residues.

Selenium has several possible new uses, and the research that has been actively in progress for many years is likely to uncover additional fields of employment. New uses are being continually found for selenium in the medicinal and chemical industries, but the amounts required, even in the aggregate, have hitherto been too small to have much effect upon sales.

At present the only possible use for selenium which may create a much larger demand for the element is its use in the rubber industry, but even in

Potential production of selenium far exceeds present commercial needs. With chemical properties similar to sulfur and yet still lacking uses involving large tonnages, serious efforts are now being directed to discover new fields for its use.

this field considerable additional research may be necessary.

Selenium closely resembles both sulfur and tellurium in its properties and, like sulfur, with which it is isomorphous, exists in at least three allotropic modifications: (1) Amorphous selenium is formed as a finely divided brick-red precipitate when a solution of selenious acid is saturated with sulfur dioxide gas. This form of selenium is said to be soluble in carbon disulfide. (2) Vitreous selenium is

formed when the amorphous variety is heated to $217^{\circ}C.$ and rapidly cooled. It is a black, brittle, and glassy mass with a highly lustrous surface. It has no definite melting point but will soften at $100^{\circ}C.$ and be completely molten at $250^{\circ}C.$ Similar to the amorphous modification, vitreous selenium will not carry electricity, and in all selenium cells, the selenium must be converted to the metallic modification before the cell will function. The specific gravity of vitreous selenium is from 4.2 to 4.5. (3) Metallic selenium is obtained on heating vitreous selenium; if vitreous selenium is kept at $210^{\circ}C.$ for some time, the mass suddenly melts, the temperature rising to $217^{\circ}C.$, and metallic selenium solidifies in a metallic, granular, crystalline form. The same phenomenon takes place if the vitreous selenium is kept heated at $100^{\circ}C.$ for several hours. Metallic selenium occurs in steel-gray, hexagonal crystals having a specific gravity of 4.8 and a melting point of $217^{\circ}C.$ It is the only modification of selenium which will conduct electricity.

A unique property of selenium and the one upon which its important use depends is that of the lowering of its electrical resistance upon exposure to light. The action is produced principally by the red rays and is proportional to the intensity of the light. The change is not instantaneous and for this reason cannot compete favorably with the potassium photoelectric cell, which, though considerably more costly,

*Bureau of Mines

is instantaneous as regards its recovery after exposure to light.

Selenium in metallic form has long been characterized by its unique action toward light. Its conductivity of an electric current varies so greatly when brought from the dark into the light that this peculiar property, varying as it does in direct proportion to the intensity of the light, has caused the development of the selenium cell.

Apart from this use, which employs only a minute fraction of the output of selenium, there are several other uses which make this metal a valuable substance in industry. Among these are its use for flameproofing switchboard cables, as a vulcanizing and accelerating agent in the manufacture of rubber, and as a colorizer and decolorizer in the glass and pottery industries.

The selenium cell has received considerable attention for many years. Its action toward light and the resulting effect upon its resistance was discovered by W. Smith in 1873, being brought about through experiments with it in connection with testing signals during submersion of long submarine cables.

Numerous Industrial Applications

Selenium cells have numerous industrial applications such as in the optophone, an apparatus invented by D'Albe by which the blind may read ordinary type by ear; the self-lighting buoy; control apparatus for chimney draft; subway, tunnel, and vehicular-tube ventilation control; control of progress in sulfuric acid manufacture by the contact process; and various other minor uses.

The selenium cell, however, can only be used where the recovery of its absolute resistance upon change from light to dark does not have to be instantaneous. Where this change must be instantaneous, other cells such as the potassium photoelectric cell or the copper oxide cell are used.

During recent years selenium cells have been considerably improved and several makes are now on the market, where the inertia has been reduced to a minimum, and the possibility of using selenium cells for television purposes is again being investigated.

Another unusual use of selenium is that for flameproofing electric switchboard cables. The cables behind the switchboards of generating and distribut-



R. M. Santmyers

ing stations are apt to accumulate dust, and this occasionally produces short circuits which when heavy currents are carried may set fire to parts of the cable covering. Cables treated with a thin layer of metallic selenium, however, are made flameproof to a remarkable extent.

Principal Use of Selenium

The principal use of selenium and its compounds at present is as a decolorizer in the glass industry and for the production of ruby glass (sailing signals, auto tail-lights, railroad signal lights, etc.) and ruby glazes in the ceramic industry. Its principal use in the glass industry is to offset the greenish tint which is caused by traces of iron in the glass sand. Manganese dioxide has been used for this same purpose but does not work so well in a tank furnace. Selenium moreover, is less sensitive to changes in the furnace atmosphere. The selenium is added, both as the element and as sodium selenite, in the proportion of about one-half ounce to 1,000 pounds of sand, together with one-sixth to one-eighth of its weight of cobalt oxide, to correct the slight muddiness which remains after selenium decolorization. Selenium requires the presence of arsenious oxide to render it thoroughly effective. It has been found that sodium selenite is far more effective as a decolorizer than metallic selenium, even when allowance is made for the selenium lost by volatilization. If too much selenium is added a yellow or ruby color may develop.

In the manufacture of ruby glass, selenium is used extensively, either in the form of the element or as the selenite in conjunction with a reducing agent such as arsenious oxide; red lead and gold chloride, however, are also used for the same purpose. When selenium is used the glass batch must be treated by an elaborate series of heatings and coolings in order to develop the ruby color.

Another use for selenium which may become of importance is as a solvent. It has been stated that selenium in the form of selenium oxychloride is one of the most powerful solvents known. Synthetic phenolic resins, such as redmanol or bakelite, which are used for many industrial purposes and have hitherto been regarded as totally insoluble are now readily dissolved by selenium oxychloride. The solvent, itself, is a heavy, nearly colorless liquid and can be readily shipped in certain types of containers.

Selenium Prices by Months

(Black, powdered, amorphous, 99.5 per cent pure, per pound)

	1913	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929
Jan.	\$...	\$...	\$2.00-2.25	\$2.00-2.25	\$2.00	\$2.10	\$2.20	1.95	\$1.90-2.00	\$1.90-2.00	\$2.25
Feb.	...	...	2.00-2.25	2.00-2.25	2.15	2.10	2.20	1.95	1.90-2.00	1.90-2.00	2.25
March	...	...	2.00-2.25	2.00-2.25	2.15	2.10	2.20	1.95	1.90-2.00	2.25	2.25
April	...	1.75-2.00	2.00-2.25	2.00-2.25	2.10	2.10	2.20	1.95	1.90-2.00	2.25	2.25
May	...	1.75-2.00	2.00-2.25	2.00-2.25	2.10	2.10	2.20	1.95	1.90-2.00	2.25	2.25
June	...	1.75-2.00	2.00-2.25	2.00-2.25	2.10	2.10	2.20	2.00	1.90-2.00	2.25	2.25
July	2.75-3.25	1.75-2.00	2.00-2.25	1.75-1.85	2.10	2.10	2.10	2.00	1.90-2.00	2.25	2.25
Aug.	...	2.00-2.25	2.00-2.25	1.75-1.85	2.10	2.10	2.10	2.00	1.90-2.00	2.25	2.25
Sept.	2.75-3.25	2.00-2.25	2.00-2.25	1.80-1.90	2.10	2.10	2.15	2.00	1.90-2.00	2.25	2.25
Oct.	2.75-3.25	2.00-2.25	2.00-2.25	1.80-1.90	2.10	2.10	2.15	2.00	1.90-2.00	2.25	2.00
Nov.	3.00-3.25	2.00-2.25	2.00-2.25	1.90	2.10	2.10	2.15	2.00	1.90-2.00	2.25	2.00
Dec.	3.00-3.25	2.00-2.25	2.00-2.25	1.90	2.10	2.10	2.00	1.90-2.00	1.90-2.00	2.25	2.00
Average	3.12	2.01	2.25	1.98	2.10	2.10	2.15	1.97	1.95	2.20	2.18

Considerable research work has been carried on in the past concerning the use of selenium as a vulcanizing and accelerating agent in the manufacture of rubber.

According to Webster Norris, authority on selenium and its compounds, selenium when mixed with rubber and heated under vulcanizing conditions, results in a product somewhat like that obtained with sulfur. Selenium and sulfur are allied in vulcanizing properties and may be used together very successfully. If the usual organic accelerators are also present, a very tough, rigid, high modulus cure results. In addition to the increased rigidity and modulus, greatly improved abrasion qualities are produced by selenium. Compounds vulcanized to a correct cure with selenium and sulfur age very well, and especially when they contain an antioxidant.

Selenium in Rubber

Several patents (United States patents 1,248,272; 1,364,055; 1,622,534; 1,622,535 and 1,622,536) have been granted on the use of selenium and selenium compounds in rubber. The compound known as selenium diethyldithio carbonate is very similar in action to Tuads or tetramethylthiuram disulfide. When used in sufficient quantity it acts as a vulcanizing agent similar to sulfur.

Vandex is a trade name for mineral selenium specially prepared and refined for the vulcanization of rubber. The chief advantages obtained by selenium vulcanization are the increase in abrasion resistance of high-grade compounds and the possibility of using even larger quantities of reclaim rubber without sacrificing wear-resisting qualities.

The use of selenium in the rubber industry is increasing, and it is estimated that in 1929 about 100,000 pounds of selenium were used in this industry. The potential demand for selenium, if the use of selenium is adopted by the entire rubber industry, is far greater than the copper refineries can furnish.

Fine-drawn wire of selenium made by the Taylor process is finding some commercial applications. This wire may be drawn to diameters as small as 1 millimeter to 1 micron.*

Limited and Uncertain Demand

The production of selenium in the United States depends entirely upon the rather limited and uncertain demand for the product. Up to within recent years the output of selenium has been very erratic. Since 1922, however, there has been an exceptional growth in the sales of selenium. In that year 123,565 pounds was sold at a value of \$177,542, an average of \$1.44 a pound. By 1925 the sales amounted to 109,407 pounds, valued at \$330,637, an average of \$1.70 a pound. There was a further increase in the sales of selenium in 1926 to 252,312 pounds, valued at \$438,132, or an average of \$1.74 a pound; and in

1927, the latest year for which figures are available, sales increased to 284,508 pounds valued at \$491,996 or an average of \$1.73 a pound

Table 3. Sales of selenium and stocks on hand at end of year, 1910-1927

Year	Sales	(in pounds) Value	Price per pound	Stocks at end of year
1910	10,674	\$35,000	\$3.28	....
1911	(1)	(1)	(1)	(1)
1912	(1)	(1)	(1)	(1)
1913	29,097	46,900	1.61	....
1914	22,867	34,277	1.50	....
1915	(1)	(1)	(1)	(1)
1916	(1)	(1)	(1)	(1)
1917	39,630	70,000	1.77	....
1918	103,694	206,540	1.99	14,500
1919	60,025	125,966	2.10	....
1920	92,141	175,508	1.90	....
1921	55,987	89,148	1.59	....
1922	123,565	177,542	1.44	....
1923	127,174	237,196	1.86	677
1924	153,762	286,066	1.86	48,419
1925	194,007	330,637	1.70	61,775
1926	252,312	438,132	1.74	72,374
1927	284,508	491,996	1.73	158,494

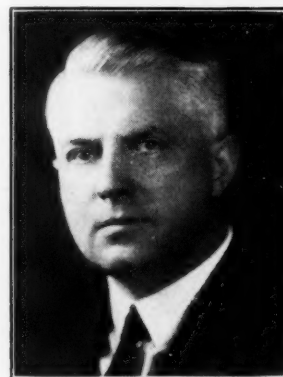
* Not available.

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Associations

Prof. Moses Gomberg, University of Michigan, became president of the American Chemical Society Jan. 1.

In accordance with a recent change in its constitution the society now elects each year a president and a president-elect, who serve in successive years.



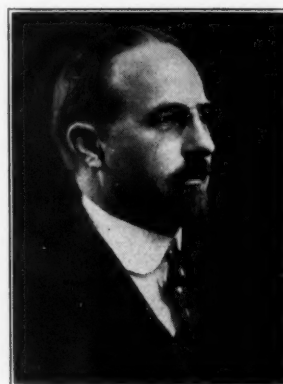
Dr. L. V. Redman

Dr. L. V. Redman, vice-president and director of research, Bakelite Corp., will be president of the society in 1932. Dr. Redman was opposed by Prof. Joel H. Hildebrand; University of California, Prof. Samuel C. Lind, University of Minnesota and Prof. Hugh S. Taylor, Princeton University.

The American Chemical Society, gained 800 members in 1930, according to report of Secretary Charles L. Parsons of Washington.

The reserve fund of the Society at the beginning of 1930 was just over \$300,000 and its trust funds amounted to nearly \$184,000. Through the will of W. H. Nichols, \$50,000 will be added to the funds of the Society. The expenditures of the year were estimated at \$557,560.

American Institute of Chemical Engineers held their annual convention at New Orleans, December 8-10. Dr. John C. Olsen, professor of Chemical engineering at the Brooklyn Polytechnic, former vice-president and for seventeen years the Institute's secretary was elected to the presidency and John V. N. Dorr,



J. V. N. Dorr

Dorr Co. to the vice-presidency, F. S. Lemaistre Coutemus as secretary. Hydrogenation was the magnet attracting many of the members to the meeting and under the guidance of Dr. Haslam, Standard Oil Development Co., a tour of inspection through the Baton Rouge plant was made by the members. In addition papers were presented by T. H. Chilton and R. P. Genereaux, of E. I. du Pont de Nemours & Co., E. C. Lathrop, J. G. Vail, of the Philadelphia Quartz Company, P. H. Groggins, of the United States Department of Agriculture, V. R. Crowell and R. Rockwell, of the Hercules Powder Co.

Plant Management

A Department

Devoted to the Business Problems of Chemical-Process Production

Left-handed Wrenches

An American chemical engineer recently returned from a tour of European chemical centers, a journey that included a visit to the 1930 Achema, the great German chemical apparatus exhibit, has asked a pertinent question. It is not a new query; but in these times it is very much to the point.

Why is it, so he inquires, that apparatus builders both in England and Germany are able to equip the most modern and intricate chemical operations with units of standard design, while anything more complicated than a steam kettle or a filter press for an American plant must be a "special job" involving the expense of special design, special construction, special erection, and sometimes in the end special operation?

We passed this leading question on to one of the oldest and wisest of our apparatus builders, and after a half-hearted denial of the implied accusation he shifted the blame to the shoulders of the chemical industry. We delivered his message to one of the most experienced and most successful chemical plant executives in the country. His explanation is illuminating.

It is true (so he said in substance though for obvious reasons we may not name him or quote his own words) that we use less standard equipment than

abroad, and this would be an added expense if special apparatus cannot justify itself in greater efficiency. Very often it cannot. We must admit therefore that the often unwarranted extra cost must be charged to the chemical industry itself. The two chief causes of this waste are carelessness and vanity.

Plans and specifications for new chemical operations are often very sketchily drawn up, and our chemical companies are too prone to lean too heavily upon the builders and equipment makers. We tell them what we want to do and leave to them the accomplishment of that result instead of working out our own problems for ourselves. Or we dash ahead with a half-baked plan and revise it as we go along.

Being different isn't always being better; but that appears to be one of the cherished delusions of many chemical engineers. Special designs seem to add to their reputation and the higher executives of the company like a special job in their plant just as they like a special paint on their car.

It would be better for us all, he concluded, if our technical and engineering staffs made their own plans and exercised their ingenuity in fitting standard units of construction and of equipment to our particular problems.



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Utilize the Steam By-Product



By S. H. Hemenway*

TO THOSE of us on the outside, chemical industry is distinguished by a continuous change of manufacturing process and equipment to utilize new chemical products discovered through obscure and mysterious ways by white-clad research scientists in mysterious laboratories. An important by-product, from the dollars and cents view, is the power generated from the process steam required in these manufacturing operations. This by-product is one that has large potentialities for savings. Highly efficient and specialized equipment has been developed on a commercial basis to this end.

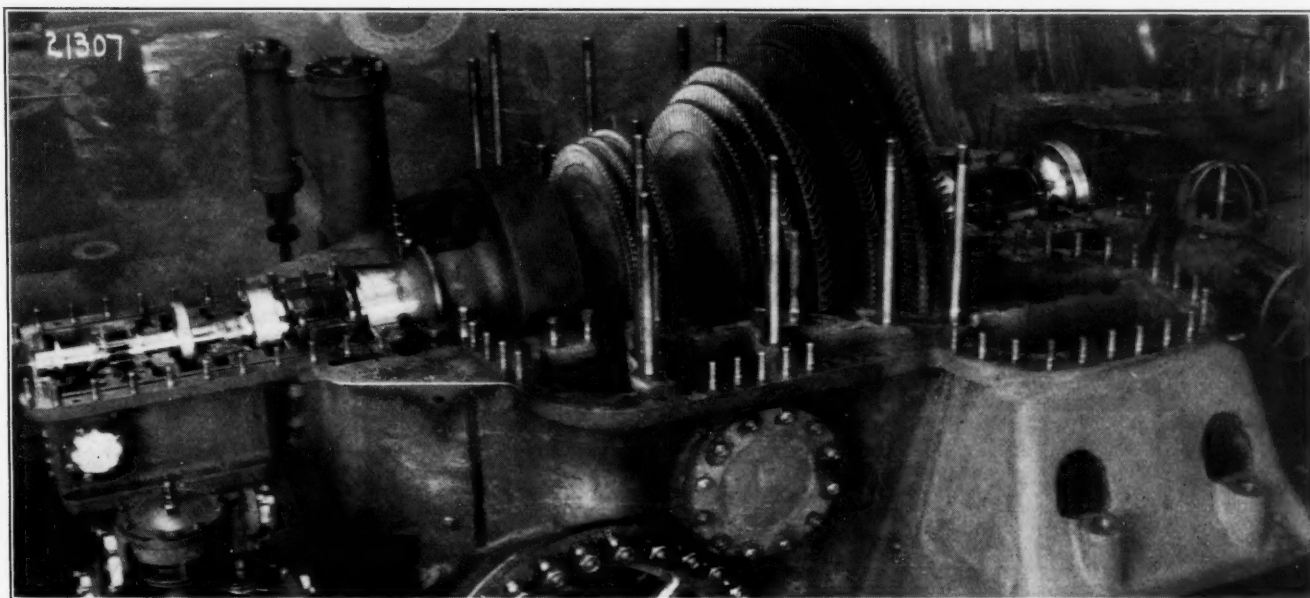
The only reason for installing steam turbines in a chemical plant is to produce chemicals more cheaply.

Power generated as a by-product of the process steam demand is obviously power cheaply obtained.

*Westinghouse Electric and Manufacturing Co.

The fundamental thermal reason for this is that in a condensing steam plant the heat of vaporization of the steam at the exhaust pressure is lost to the circulating water. If, on the contrary, the steam is expanded in the steam turbine from some higher pressure and then used in the process, for instance, taken to some jacketted retort the heat of vaporization is usefully employed in heating the retort, instead of being thrown away to the condenser circulating water.

Perhaps the magnitude of this well-known condenser heat loss will be better appreciated by reference to Figure 1 which shows the heat quantities plotted to scale. To develop power in a 400. lb. condensing steam plant, $1332-48 = 1284$ B. T. U. per pound must be added to the steam to secure $1332-957 = 375$ B. T. U. of useful work. In the by-product plant, only the heat actually used as power is chargeable to power. Of course, a larger quantity of steam is required to develop a kilo-



Head-piece of turbine removed

HANGING ON to a **WHITE ELEPHANT** is costly economy these days

Profits in the present chemical situation are usually reserved for those plants that are *best* designed and equipped for low cost operation. Obsolete plants . . . white elephants on their owner's hands . . . are forced to quote prices with slight regard to costs, else do without business entirely.

If indeed your present facilities fail to measure up, you will find it false economy to do without modernization or rebuilding . . . for when you need a thing you pay for it, whether you buy it or not . . . unnecessary production costs, in a plant not designed for straight-line production will often pay for complete new facilities . . . why not have them?

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watt-hour in the by-product plant, but the B. T. U. per kilowatt hour is less, as noted below, the mechani-

ately cut off from the outside line and from non-essential plant load, thus avoiding heavy losses of this kind.

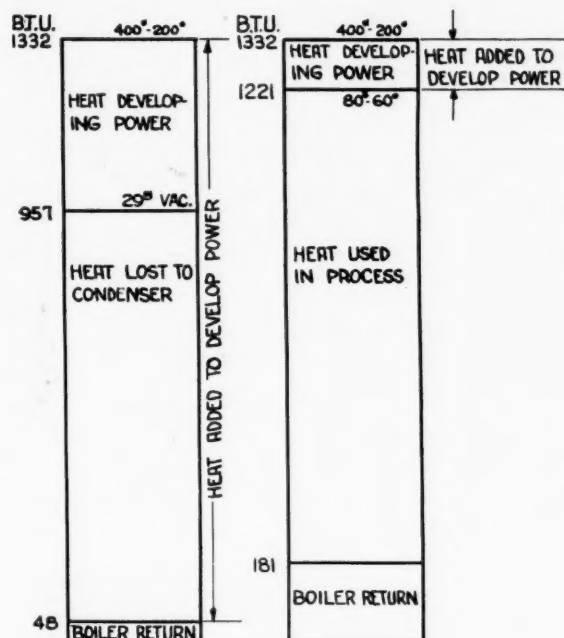


Fig. 1. Heat quantities necessary to develop power

cal efficiency being taken as 98%, and the electrical as 96%.

Condensing Plant	By-Product Plant
No. Stm/Kw. hr. = 3412	-9.65 = 3412
375x. 98x. 96	111x. 98x. 96
B. T. U./Kw. hr.	
at turb. throttle = 9.65(1332-48) = 12400	= 32.7(1332-1221) = 3630

In certain industries where a short power interruption causes spoilage of semi-finished product, sufficient plant generating capacity to carry at least this essential load is economically desirable. Electrical relay systems have been developed whereby in the event of failure of the outside power line, the plant turbine-generator and the essential plant load are immedi-

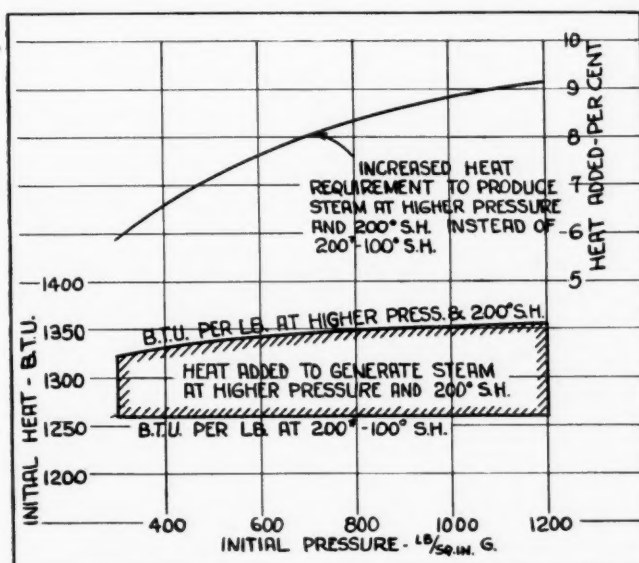


Fig. 2. Heat required to develop steam at higher pressures

Additions to Old Steam Plants

Many manufacturers having 200 lb. boiler plants are faced with a dilemma when they need more steaming capacity—cost of putting in all new boilers and equipment for 400 lb. or higher is prohibitive, and installation of more 200 lb. boilers is economically unsound. Frequently this problem has been successfully met by installing higher pressure boilers only for the additional steam capacity required, expanding this steam in turbines to the present boiler pressure.

That there are many such low-pressure boilers in use is attested by the statement commonly made that one-half the boilers in this country are hand-fired, and

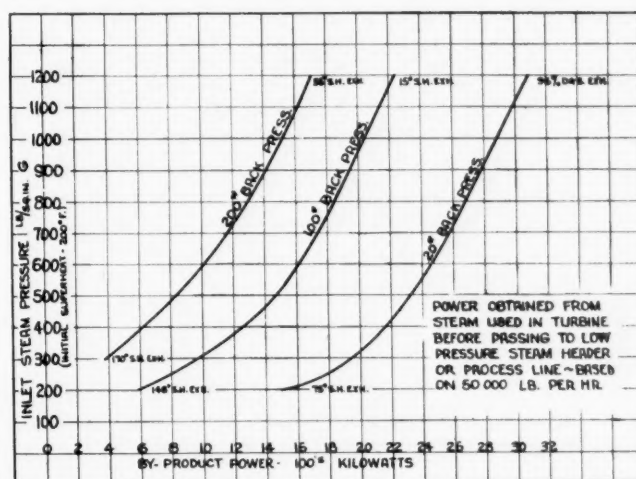


Fig. 3. By-product power obtained for different pressure ranges

of course, only the low-pressure ones are so operated. Some recent figures for the amount of coal fired per year in this country follow:

	Tons
Hand-firing.....	275,000,000
Under feed stokers.....	100,000,000
Chain Grate Stoker.....	40,000,000
Pulverized Coal.....	25,000,000
	440,000,000

Only a small additional amount of heat is required to generate steam at a higher pressure and superheat. The amount of added heat units, as well as the per cent added is graphically represented in Figure No. 2.

An installation of this type was made in a plant producing caustic soda. Turbines taking steam at 250 lb. exhausted to the old boiler system at 125 lb. The turbines were so designed that they could later be renozzled to efficiently use steam at 450 lb. This adaptability for different steam pressures is an important advantage in an industry where the processes change rapidly. In this plant there were some two



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a base for the making of fine precipitated chalk used in the manufacture of tooth paste, facial powders and medicinal tablets—a material formerly imported from England. For the same reason—its high purity making refining unnecessary—its use results in economical manufacture of many chemical products.

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dozen gas compressors besides air compressors and other auxiliary equipment designed for 125 lb. pressure. To have discarded all this for higher-pressure equipment would have been out of the question.

Another example of this type of installation is a 300 lb. boiler plant and 1,000 Kw. turbine installation recently made, exhausting to a 150 lb. boiler system. There is no additional operating cost in such an addition to an existing plant and by this installation a substantial saving was made.

This is the simplest type of by-product turbine. The turbine takes the steam from the higher pressure boiler header, and exhausts it to a lower pressure boiler header. Generally this type of turbine carries a load just sufficient to satisfy the steam demand at the lower pressure. A pressure regulator opens the turbine valves to admit high-pressure steam in accordance with the demand for low-pressure steam. The turbine then exactly replaces a reducing valve, and the power obtained is truly a by-product. The

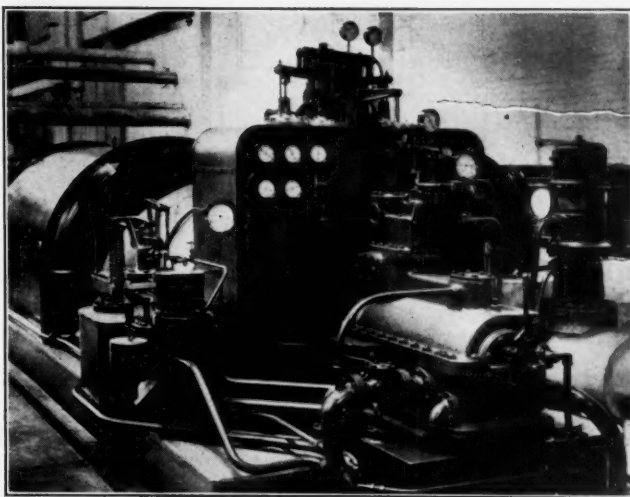


Fig. 5. 4,000 Kw. back pressure bleeder turbine in a paper mill

obtained expanding 50,000 lb. steam per hr. from a higher pressure to 200 lb. An installation of this type

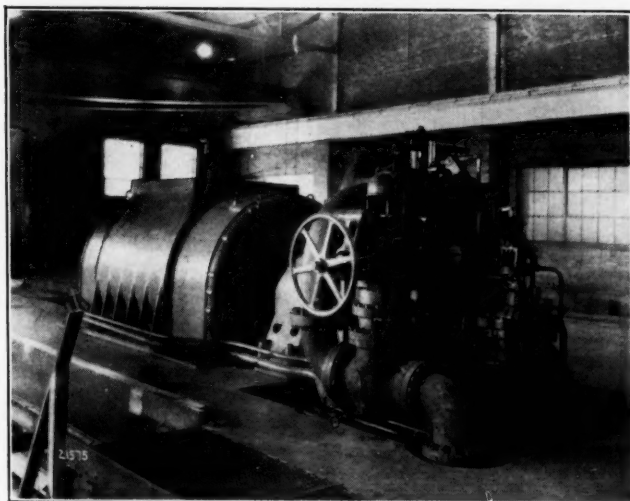


Fig. 4. Back pressure turbine driving 3,000 Kw., 25 cycle generator through gear

amount of power that can be so generated is shown in Figure No. 3, where the left-hand curve shows the power

is shown in Figure No. 4, in which the turbine drives a 3,000 Kw. 25-cycle generator through a gear.

Fig. 6. 7,500 Kw. turbine bleeding at 125 lb. and exhausting at 25 lb.



Economy of New Plants

New plants, carrying all the overhead and operating charges incident to steam and power generation, also show substantial profits through production of by-product power. A recent installation of a 4,000 Kw. turbine in a pepper mill shows a saving of \$100,000.00 a year according to the owner's operating figures. This turbine takes steam at 400 lb., and sends steam out to process at 125 lb. and at 20 lb. This installation is shown in Figure No. 5.

A 1,500 Kw. turbine installed in a rubber tire plant takes steam at 425 lb., 200° Suph., bleeds steam at 170 lb. and exhausts it at 85 lb. This installation has proven highly economical and the capital expenditure has been justified.



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Many back pressure turbines of this type are installed to supply steam for use in the process line, instead of exhausting into a lower-pressure boiler system. That a great deal of power can be realized in this way will be apparent by again referring to

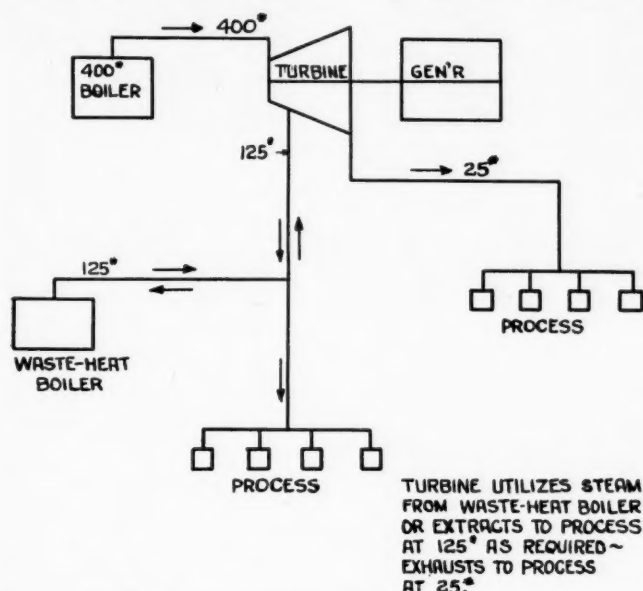


Fig. 7. Turbine using steam from waste-heat boilers

Figure No. 2, in which is shown the power obtained when expanding steam down to 100 lb. back-pressure and 20 lb. back-pressure from different initial pressures.

Many such installations have been made in oil refineries, the turbine taking steam at anywhere from 300 lb. to 800 lb. initial pressure, and exhausting at 125-175 lb. pressure for yard use. A most noteworthy recent installation of this type is in a southern oil refinery, where three 15,000 Kw. turbines take steam at 600 lb. initial pressure and exhaust at about 140 lb. The steam passed through each machine is determined by the demand for low-pressure steam, and the electrical power produced is used in the refinery to the extent of their demands, the balance being fed out to the Utility Company's lines. The utility lines

supply power to the refinery when the steam demand is insufficient to generate the power they need.

In plants where it is desired to carry a constant load regardless of the process steam demand, a number of stages are added to the turbine blading following the point at which steam is taken off the process. These blades expand the steam to condenser pressure. This type of machine is known as a bleeder turbine. In this type of turbine, the control is so arranged that a constant pressure is maintained in the process steam line and just enough steam is passed to the condenser to carry the electrical load. With a fluctuating demand for process steam, the amount of steam sent to the condenser is automatically varied to maintain a constant electrical load.

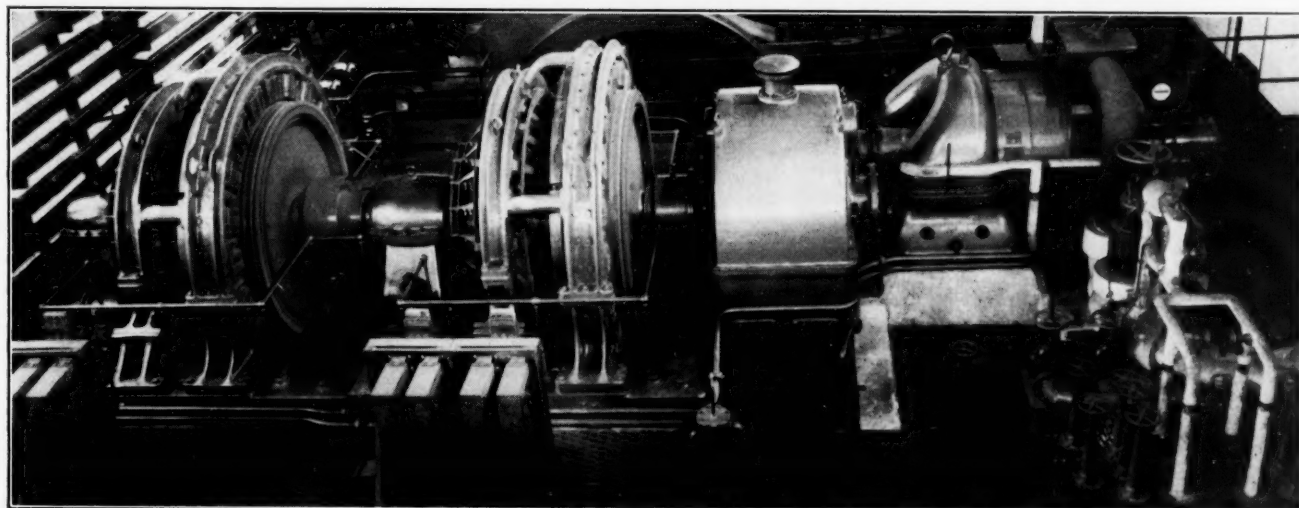
By-Product Power Turbine Types

A turbine of this general type is shown in Figure No. 8, where the turbine drives two 1,400 Kw., 125-Volt, D. C., generators in tandem through a gear. This installation is in a copper refining plant, the power being used for the deposition of the metal. The gear permits the turbine to operate at its most efficient speed, which is considerably higher than the best speed for the D. C. generator.

Frequently installations are made where the turbine extracts steam at a relatively high pressure, say 100 lb. to 200 lb., and exhausts steam at some lower pressure, say 15 lb. to 50 lb. This type may be so governed as to maintain the required pressure in both process lines, the power generated being determined entirely by the demand for steam. An installation of this non-condensing type of bleeder turbine is shown in Figure No. 6.

This type turbine is very flexible as to steam conditions. The pressure at which steam is extracted may be varied 15 lb. to 25 lb. up or down by merely changing the number of weights on the pressure regulator. The same is true of the exhaust pressure. A change in the process used, requiring the extracted steam to be

Fig. 8. Turbine using steam from waste-heat boilers



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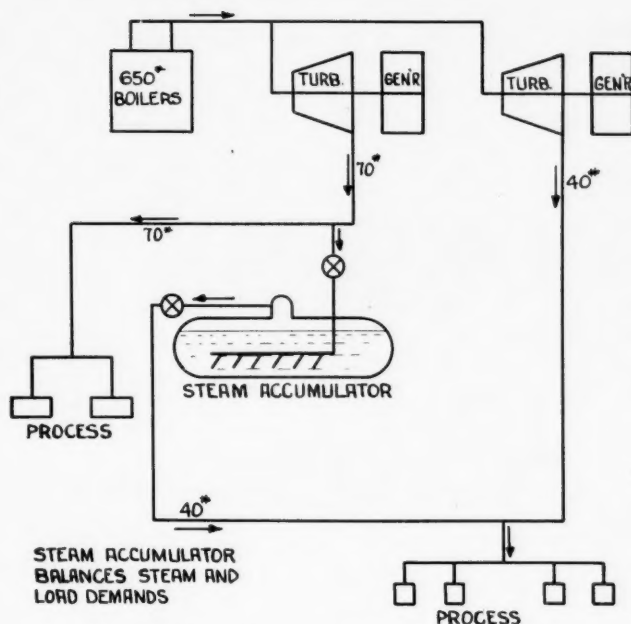


Fig. 9. Turbine using accumulator instead of condenser

taken at an entirely different pressure may be accomplished, maintaining the original efficiency, by renozzling the turbine. Likewise, the boiler pressure may be changed from 250 lb. to 400 lb. or 600 lb., the change being taken care of on the turbine by renozzling, if this is taken into consideration when the turbine is built.

Where waste-heat boilers are used, the turbine control may be so arranged that when the process steam demand is less than the steam supplied by the waste-heat boiler, this steam may be induced into the turbine and generate power, instead of being relieved to the atmosphere. When the process demand is greater than the steam generated in the waste-heat boilers, steam will be automatically extracted from the turbine. The electrical load on the turbine will remain constant. A diagrammatic arrangement of this type of installation is shown in Figure No. 7.

The turbine shown in the heat-piece is one used in an ammonia plant to maintain the steam pressure in a low-pressure header. The control is so arranged that the turbine takes more steam and generates more power when there is more steam available from the exhaust of other machines than is required in the process. This shop view was taken with the cover removed, (page 49) and shows the large blade passages required for low pressure steam. The large inlet for low-pressure steam is shown at the bottom center.

Where it is desired to maintain a constant load with varying demand for process steam, the steam and load demands may be balanced by means of steam accumulators, thus obviating the use of a condenser. (Figure No. 9 shows an arrangement used in a plant requiring steam at 70 lb. and at 40 lb. pressure.)

Frequently in a plant producing by-product power, the small additional capital expense necessary to generate the balance of their power in straight-condensing machines and the small additional operating

expense entailed, make it cheaper to generate than to buy this additional power.

Whereas ordinarily the greatest stress in turbine selection is placed on overall economic efficiency, in the chemical plant where the heat not converted to work goes to process anyway, equal or greater stress may be placed on the ability to fit a turbine to a given problem in the proper use and control of process steam. About three years ago, two 1,500 Kw. turbines were placed in an oil refinery, taking steam at 250 lb. and 125° Suph., and bleeding steam at 125 lb. About three quarters of the steam bled is regained at 5 lb. The turbine regulating system is so arranged that the turbine supplies sufficient steam to take care of the 125 lb. steam demand under pressure control. The turbine governor then admits sufficient 5 lb. steam to carry the balance of the electrical load. The 5 lb. steam in excess of that required to carry the balance of the load by-passes to the condenser, which is used as a water heater. If there should be insufficient 5 lb. steam to carry the load, the turbine governor by-passes steam direct from the 125 lb. point in the turbine to the 5 lb. steam inlet, as the control is also arranged to maintain the correct pressure in the 5 lb. line.

Most of the turbines now built for industrial plants are designed to cover special steam and load requirements similar to those we have been considering. To meet such requirements of industry, turbine builders have organized their businesses to be able to design and manufacture such turbines for delivery in three to five months.

The Industry's Bookshelf

The Industrial Revolution in the South, by Broadus Mitchell and George Sinclair Mitchell, 312 p., published by Johns Hopkins Press, Baltimore, Md., \$2.75.

A study of the growth and present status of the Southern textile industry and its significance to the South.

Fundamentals of Organic Chemistry, by Harry E. Lewis, 390 p., published by McGraw-Hill, N. Y., \$2.75.

A textbook of organic chemistry based upon the atomic linkage theory, prepared especially for use in liberal arts courses.

Foreign Trade, by Grover G. Huebner and Roland L. Kramer, published by D. Appleton & Co., N. Y., 805 pages, \$5.00.

A comprehensive general treatment of the subject.

Chemical Synonyms and Trade Names, by William Gardner, 355 pages, published by Industrial Book Co., Inc., N. Y., \$9.00.

Third edition, revised and much enlarged of a chemical dictionary and commercial handbook containing about 20,000 definitions and cross-references.

Industrial Evolution, by Norman S. B. Gras, 250 pages, published by Harvard University Press, Cambridge, Mass., \$2.50.

A non-technical brief history of manufacturing, surveying the whole progress of industry in Europe and America. Illustrated.

A prize of 20,000 lire is offered for the best original paper on "New Uses of Citric and Tartaric Acid" by the Italian Chemical Association. Full particulars can be obtained from Associazione Italiana di Chimica, Roma (101), Via IV Novembre, 154.



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Accounting for Returnable Containers

A Simple, Sure System

By J. J. Berliner, B. C. S.

ACCOUNTING for returnable packages or containers presents four distinct features:

1. There is the liability to the customer for the cash credit to him of the amount charged for the container, when it is billed out to him with goods shipped therein.
2. There is the asset of the actual value of the container in the hands of the customer to be returned.
3. There is the loss, or expense of maintenance of the container; and the loss from wear and breakage, or the value of the worn out and discarded or dumped.
4. There is the element of profit in those containers which are never returned but are damaged beyond repair or retained by the customer.

A Tragic Example

Taking these in the order named, we have as extreme example first the liability of one large factory that was forced close to the wall by the redemption of returnable packages during a panic. The records did not include this liability, and the company was unprepared to meet the sudden call for the redemption of outstanding obligations of this character, which the tightness of money caused their customers to look up and convert into cash.

In order to handle this item properly it is necessary to start at the time the package is billed out to the customer, (see form I) and separate it from the goods therein. From the sales sheet it is posted to the customers' or sales ledger (form 2) where it is so recorded that one may at any time ascertain at a glance whether the customer is indebted for goods or owes for returnable packages.

The next step is the credit memo covering the return of these containers (form 3) which, like the sales sheet, is posted direct to the customers' or sales ledgers. The total of returnable containers charged to customers is credited monthly to outstanding returnable container account in the general ledger. This account is charged monthly with the packages redeemed both from the total of the column in the cash book for those paid for in cash and the total of the credit memos for those credited through these records. The difference

in the outstanding returnable packages accounts, if handled in this manner, will at all times show the amount in dollars and cents, of packages outstanding.

The keeping of the returnable container separate from the merchandise is important, not only for proper accounting and to ascertain the true condition of ac-

Heading to be in usual form for sales sheets

Date	Goods	Mdse.	Pkgs.	Total

Form No. 1 Sales sheet, size to be made to suit business.

counts receivable; but it is also important in arriving at proper commissions due salesmen, as no chemical business can properly pay a commission on that part of the sales which nets no profit and is only a necessary expense of operation.

Heading to be in usual form for sales ledger sheets
Debits Credits

Date	Mdse.	Pkgs.	Total	Total	Mdse.	Pkgs.	Date

Form No. 2 Customers' ledger, size to be made to suit business.

The second factor is the asset consisting of the value of the not-yet-retained containers to be redeemed.

As in almost every case where a returnable container is used in trade the price charged for the container exceeds its actual cost, this asset cannot equal the

Heading to be in usual form for credit memos

Date	Goods	Mdse.	Pkgs.	Total

Form No. 3 Credit memos, size to be made to suit business.

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amount charged. In many cases the original cost is not more than sixty or seventy per cent of the charge and its value as an asset is less than its original cost, for by use it has become second-hand and requires expense in labor and often in material before it can again be fit for use.

Therefore when considering these outstanding containers as an asset, they can only be properly so taken at a value not to exceed their cash second-hand worth if returned and in stock. This asset only appears on the books at inventory periods, and is handled as shown later.

The third question is maintenance or loss.

Handling Cost Records

The cost of maintenance is handled in the records as would be any other expense account and is covered by an account known as maintenance of returnable containers. This includes all labor and material used in cleaning or repairing and reconditioning returned containers for use. It does not, however, cover the value of containers discarded or dumped. Worn out or discarded containers are charged to profit and loss and credited to returnable containers account.

It will be noted that a new account is here introduced, "returnable containers account." This account has nothing to do with the account known as "outstanding returnable containers," mentioned above.

Returnable containers account is started with the inventory of packages on hand in the factory or warehouse plus the inventory of the actual value of returnable packages in the hands of customers. To this account is charged during the year the purchases (at cost) of new containers. It is credited with containers discarded or dumped. In other words, the returnable container account is the asset account and the outstanding returnable containers account is the liability account.

These two, with the maintenance of returnable packages account, complete the accounting record of the returnable container in all cases where it is charged for as a part of the selling price of the merchandise. They do not in any way cover the method necessary or desirable where the value of the container is not included in the selling price or repurchased by the manufacturer, but is simply kept track of and collected by the distributor, as is the case in a few branches of the chemical trade.

Profit on Retained Containers

This now brings us to the fourth and last element, that of profit on containers retained by the consumer.

While this profit does undoubtedly exist, the determination of its exact amount if not impossible is extremely difficult. The most practical method is to determine by experience the percentage of the containers sold which are never returned, but which are paid for by customers and whose age precludes their

being returned for credit. In arriving at this percentage, be careful to be conservative in order that the liability may not be reduced below its real amount. Once ascertained this profit is credited to profit and loss and charged to outstanding returnable containers account. This must be done, of course, before the inventory of containers in hands of customers is made up, as that also is calculated on a percentage basis and governed by the balance shown on the outstanding returnable containing account.

Proper Handling of Returns

Another important feature in the proper handling of returnable packages, which has not yet been discussed, is the relation to accounts receivable. Unless form 2 or something similar is used for a customers' or sales ledger, it will be very difficult to separate the real asset in the accounts receivable from the amount due for returnable packages. Accordingly in drawing up the statement, the accountant is apt unwittingly to deceive the banker or executive as the real condition of the business under examination.

New Bulletins

The Cooling Tower Co., Inc., has just issued two new bulletins, a new price list and a new data sheet.

The new Brown Instrument Co. catalog No. 46, is just off the press.

Alsop Engineering Corp. describes liquid handling equipment in a new bulletin.

New publications of Worthington Pump and Machinery Corp. are devoted to deep well pumps and to power pumps.

The Bureau of Mines, U. S. Department of Commerce, Bulletin No. 324 is entitled "Zinc Smelting from a Chemical and Thermodynamic Viewpoint."

Combustion Engineering Corp. issues a new edition of its General Condensed Catalog.

The Hercules Powder Co. has just issued a handsome illustrated booklet on "Keeping the Ball Rolling," an advertising campaign to increase the sale of nitrocellulose products. The cover is of paper treated with nitrocellulose lacquer.

Two new inhibitors developed by the Grasselli Chemical Co. are announced in a new folder.

The American Transformer Co. announces a high-voltage testing set of flexible design.

The Howe Scale Co. "Weightograph" is described in several new bulletins of the company.

General Electric has issued new leaflets on motors and steam turbines.

W. A. Taylor & Co., Inc., of Baltimore, have just placed on the market a new set for pH control, known as the slide comparator, which is described in their folder.

The Fisher Scientific Co. organ, "The Laboratory," recently received, contains descriptions of modern laboratory equipment.

The December number of "Synthetic Organic Chemicals," published by the Eastman Kodak Co. is devoted to articles on reference fuels used as anti-knock standards and a distillation set-up for frothing liquids.

"Alcohol in Refrigeration" is the theme of the December Ross-ville Alcohol Talks.

Economy Engineering Co. announces an entirely new line of ball-bearing equipped lifting machines.

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The economies which always mark the use of Aero Brand Cyanides are due to our high standards of production, ample storage and prompt deliveries of these uniform metallic salts.

We can demonstrate that Aero Brand Cyanides assure finer plating and fewer rejections. Ask for proof, there is no obligation. Your inquiry on the following Aero Brand products as well as those listed below will receive prompt attention:

Potassium Cyanide—94/96% Potassium Cyanide single salt in granular form.

Copper Cyanide—70/71% Metallic Copper.

Zinc Cyanide—55/55½% Metallic Zinc.

Silver Cyanide—80½% Metallic Silver.

Sodium Cyanide "Aeroids"—96/98% Sodium Cyanide—½ oz. ball form.

A partial list of our other Industrial Chemicals:

Aqua Ammonia
Ammonium Chloride
Carbonate of Potash
Case Hardening
Compounds
Chromic Acid
Copper Sulphate
Cresylic Acid
Dicyandiamid
Diorthotolylguanidine
Diphenylguanidine

Ethyl Lactate
Ethyl Oxybutyrate
Formic Acid
Hydrocyanic Acid
(Liquid)
Nitrocellulose
Red Prussiate of Potash
Rezyls
Rezyl Balsams
Sodium Phosphates
(Di and Tri)

Sulphocyanides
(Thiocyanates)
Sulphur
Sulphuric Acid
Teglac
Thiourea
Urea
Yellow Prussiate of
Potash
Yellow Prussiate of Soda



Industrial Chemicals Division

American Cyanamid Company

535 Fifth Avenue New York

Chemical Facts and Figures

Washington Considers Alcohols, Ethyl and Methyl—The Anti-Freeze Question and Methanol—Muscle Shoals in Conference—Salt Cake Dumping and Manganese—News of the Companies and Their Personnel—Coming Events.

Alcohol, ethyl and methyl jumped about with such rapidity that to obtain a clear and comprehensive view of the situation it is necessary to revert to a chronological outline of the more important features.

Dec. 4, Dr. Doran, chief of the Industrial Alcohol Bureau, held a meeting of the Advisory Board in Washington to draft the final regulations for the manufacture and sale of alcohol, the same to be placed in effect as of January 1.*

Dec. 5, the House rejected an amendment to the Treasury supply bill prohibiting the use of deadly poisons in industrial alcohol.

Dec. 8, sugar producers from the leading countries of the world met in Amsterdam and tentatively agreed to a restriction of exports, and, ultimately, it is a fact, to a higher price for scrap molasses, the raw material of alcohol manufacture.

Doran Reports

Dec. 8, Dr. Doran released at Washington his annual report for the fiscal year ending June 30, 1930 indicating a decrease in production of 8,972,708 gal. with actual production amounting to 191,859,342 gal.

There were withdrawn from bond, free of tax, for denaturation 181,601,420.34 proof gallons of alcohol and rum, against 182,778,966.1 proof gallons withdrawn for this purpose during the previous fiscal year.

There were 105,787,537.72 wine gallons of denatured alcohol produced during the fiscal year, of which 58,141,740.88 wine gallons were completely denatured and 47,645,796.84 wine gallons were specially denatured, compared with 106,960,458.07 wine gallons of denatured alcohol produced during the previous fiscal year, of which 52,405,451.92 wine gallons were completely denatured and 54,555,006.15 wine gallons were specially denatured.

Enter Alcotate

But the high spot of the report was the announcement, that, effective January 1, methanol would no longer be used as the denaturant of 1 and 5 formulas. Alcotate, a California petroleum distillate, will be substituted, imparting to alcohol a stench

*Later postponed until January 31.

similar to garlic and rotten eggs, but non-poisonous. The seriousness of this regulation to the wood alcohol industry becomes readily apparent when it is noted that between two and three million gallons were formerly consumed yearly for denaturing purposes. Many consuming industries will oppose vigorously the use of alcotate. In many processes such an odor would render manufacturing activity practically impossible, such as for example, in the drying of shellac applications in closed spaces. To date the representatives of the larger users such as the Shellac Manufacturers Association have not formally taken any definite stand for or against the introduction of the new denaturing substance.

Methanol Anti-freeze

Dec. 6, a preliminary report was issued by R. R. Sayers and W. P. Yant of the Bureau of Mines of their study of methanol as an anti-freeze for automobiles. Briefly their conclusions may be summarized, "That there is no danger of poisoning from a reasonable use of methanol as an anti-freeze in radiators."

Dec. 8, Henry C. Fuller, formerly chemist in the Bureau of Chemistry and assistant to the late Dr. Harvey W. Wiley, attacked the findings of Sayers and Yant charging that the report was based upon an investigation financed by the manufacturers of synthetic methanol (this was publicly announced at the time the investigation was first undertaken) and that it might lull the public into an unwarranted feeling of security. "They call it methanol now—the same liquid with its subtle effects that for years has been a danger signal to health in the mind of the public and known to the layman as wood alcohol."

Dec. 11, agitation started in several quarters calling for the regulation of methanol sales by the Government in much the same way that other poisons are supervised. Numerous agencies and individuals, including Dr. Doran, claim that the recent serious outbreaks of deaths in various sections of the country from alcohol poisoning are directly at-

tributable to the entire lack of any supervision of either the manufacture or sale of wood alcohol.

Muscle Shoals

Muscle Shoals shouldered its way rather prominently into the news of the month. With Congress primarily interested in the question of unemployment little opportunity presented itself to the partisans of the governmental operation of the fertilizer units to obtain a hearing on the floor of either the upper or lower house. Under the leadership of Senator Norris several conferences were held, however, during the month between the Senate and the House committees and on one or two occasions it was reported that an agreement was quite possible.

However, the Senate conferees rejected the suggestion of the House conferees that the Muscle Shoals power and nitrate plant be leased to private concerns and that strict governmental supervision be imposed upon the lessee by contract for marketing surplus power. The House conferees said they would agree to the Senate preferences to municipalities and mutual associations and the Senate restriction on its sale to power companies, giving every safeguard and every protection to the public.

The House conferees insisted that the President be authorized, as provided in the House bill, to negotiate lease contracts for operation both of the nitrogen and power plants for quantity rather than experimental manufacture of fertilizer and for production of chemical by-products useful for national defense. The House conferees want the surplus power in excess of that required for the operation of the nitrate plant to be distributed to the public and want the provision that the lessee have the right to recall any power that might be sold as surplus whenever the production demands the additional electric energy.

Neither side being willing to accept these proposals, the meeting ended with the suggestion that the conferees meet again within a week or ten days. In the interim the following counter proposal was made by Senator Norris who suggested to the conferees that his measure, as passed by the Senate, be amended so as to permit the President to lease within 12 months the nitrate plant for manufacture of fertilizers. If, after this time, the President is unable to lease the plant, the provisions of the original bill would become effective. Senator Norris believes, it is reported, that President Hoover is behind the opposition

to government operation of power and nitrate plants and does not believe the President would be able to get a lease. Should the President obtain a lessee the government would set aside all power required in the manufacture of fertilizer and would enter into no contract that would interfere with supply of power to the lessee.

The House conferees suggested that the government lease the nitrate plant making liberal provision for manufacture of fertilizers. Senator Norris would temporarily accede to this provision but opposes the suggestion that the government sell surplus power only at the switchboard. The Senator believes the government should have the right to build transmission lines, otherwise it could not sell power to anyone but Alabama Power Co.

With the relief bills out of the way, both Houses adjourned for the holiday vacation and further developments in the situation await the convening of the new Congress unless the President calls a special session, which at the moment, according to advises from Washington, appears very improbable. The American Farm Bureau Federation at its meeting in Boston Dec. 10, propounded its view of the Muscle Shoals question with the adoption of a resolution calling for the operation of the fertilizer plant by a cooperative organization of farmers.

Salt Cake Dumping

Opponents and proponents of an anti-dumping order against German salt cake appeared before the Customs Bureau at a formal hearing held on Dec. 4.

Evidence was introduced by producers that the German product is being sold in the American market at a price less than for which it is offered in Germany. However, there was a conflict of opinion as to whether the alleged unfair price was injurious to the domestic industry. Furthermore, many consumers of salt cake insisted that no dumping duties should be instituted.

Consumers claimed that they could not obtain a sufficient supply of domestic salt cake and for this reason they were forced to buy in Germany. One consumer declared that his corporation purchased in Germany in order to conserve the American natural supplies of salt cake.

Representatives of Sulfat Vereniging of Frankfurt-on-the-Main, the German sulfate association and salt cake producer and its American selling agents, appeared. They insisted that the domestic industry was not being injured. Dr. J. Anthony Schwarzmans of New York represented the German Sulphate Association.

Soviet Manganese

American Iron and Steel Institute made public on Dec. 7, its reply to the

brief of the American Manganese Producers' Association before the Bureau of Customs, United States Treasury Department, challenging the association's charge that Russian manganese ore was being "dumped" in this country.

The reply, prepared by Thomas J. Doherty, tariff counsel for the institute denies that Russian manganese ore had been "dumped" in the United States or that "an industry of the United States is being or is likely to be injured, or is prevented from being established" as the result of such importations.

The pamphlet issued by the institute holds that the complaint of "dumping" is not bona fide, but that it was urged and was being used for "some ulterior purpose."

Replying to the brief on Dec. 17, the American Iron and Steel Institute, the American Manganese Producers Association insisted that the institute had failed to answer the charges made in the demand for the order.

The producers' brief reiterated the charge that Russian manganese was being imported to the United States and sold at such low prices as to wreck the American industry. It termed the institute's brief "a treatise embodying every conceivable form of ill-tempered denial."

News of the Companies

Representatives of Merck & Co., Inc. from all over the country attended the annual Sales Conference held at the Company's main offices in Rahway, N. J., on December 15 to 17. At these meetings matters bearing on sales and distribution are discussed from various angles. James J. Kerrigan, vice-president in charge of sales and merchandising, presided over the various sessions. The subjects discussed covered a wide field, varying from a complaint comparatively trivial to the views held by some noted economists on trends in business and the outlook in general.

United States Phosphoric Products Corp. plant at Tampa is now almost completed.

When all buildings connected with the terminal, as well as wharves, loading platforms, etc., are finally opened to traffic at the start of the year, officials of the company state that the entire project will have involved a total cost of about \$8,600,000.

The International Nickel Co. has expanded its development research department by one-third to find new outlets for its mineral products. This announcement was made by J. L. Agnew, vice-president of International Nickel, before an audience of engineers and other technical men at a

luncheon given by the Toronto branch of the Canadian Institute of Mining and Metallurgy, at the Engineers' Club.

American Cyanamid Co. has organized a Delaware company of its recent acquisition, A. Klipstein & Co. The new Cyanamid subsidiary is capitalized with 10,000 shares of no par value stock, and was merged with Kalbfleisch.

Charles L. Huisking & Co., Inc., one of the oldest chemical houses in New York City moved January 1 from 5 Platt street to larger quarters at 153 Varick street. The company has been located in Platt street since 1914.

Sharples Solvents plant at Belle, which was closed October 22 resumed operations recently at 75 per cent capacity, it was announced by C. E. Perkins, plant superintendent. The resumption of work will recall between 75 and 85 men to their jobs.

Du Pont Ammonia Corp. plant at Belle, W. Va., has reduced working hours to 40 hours, from 48 hours.

This action has been taken by the du Pont company, rather than lay off any of its employees on the operating staff.

R. & H. has been appointed selling agent for the National Ammonia Co., Inc. another du Pont subsidiary.

Hercules Powder has opened a new department to be called the Foreign Relations Department. In charge of the new department will be Peter W. Meyeringh, until recently manager of the Hercules European connection, the N. V. Hercules Powder Company at Rotterdam, Holland.

The purpose of the new department, according to Hercules officials, will be to co-ordinate sales and the development of new business in foreign lands.

J. Bishop & Co. Platinum Works of Malvern, Pa., and Johnson Matthey & Co., Inc., Precious Metal Refiners of 14 West 47th St., New York City, have formed a connection whereby the latter house together with their parent company Johnson Matthey & Company, Ltd. of London, England, have acquired an interest in J. Bishop & Company Platinum Works.

Immediate expansion of J. Bishop & Company's plant is planned, including additional laboratory facilities for electrical and metallurgical research and development.

This affiliation brings together the two oldest platinum refining and manufacturing companies in their respective coun-

tries. Johnson Matthey and Company was founded in London, England, over a century ago, while J. Bishop & Company Platinum Works was founded at Philadelphia in 1842. Johnson Matthey & Co., Inc. has been the American representative house of Johnson Matthey & Company, Ltd. since 1920.

Charles A. Wagner Co., of Philadelphia announced the removal of their office and warehouse to 813 Callowhill st., the phone number remaining unchanged.

Penick & Ford Sales Co., Inc., has been ordered by Federal Trade Commission to discontinue its so-called "one hundred per cent policy" which it is said provides for omission and refusal of sales assistance to wholesalers who fail to deal in Penick & Ford products to the exclusion of competing products.

The commission's order states that the practices objected to were inaugurated in 1924 and discontinued in 1927. The original complaint was issued in March, 1929.

Tennessee Copper & Chemical Co., which recently changed its name to the Tennessee Corporation has announced that now the expansion program will represent an expenditure of approximately \$2,000,000.

Mallinckrodt Chemical Works, Ltd., Montreal, Canadian branch of the Mallinckrodt Chemical Works, St. Louis, has established a factory for the manufacture of fine chemicals at 183 Front street, East Toronto.

The Mapes Formula & Guano Co. has been incorporated in Jacksonville, Fla., with a capital stock of \$25,000, by H. Woodruff, 1914 Silver street, and others. H. Woodruff for a number of years was Florida manager of the Mapes Formula & Peruvian Guano Co., the oldest mixing fertilizer company in the country.

Glyco Products Co., are now marketing a new series of resins. They are of particular interest in paints, lacquers, varnishes, printing inks, adhesives, because they promote adhesion to smooth surfaces.

General Dyestuffs Corporation announces Fastusol Red, 4 B A. The dye produces on cotton, rayon and other vegetable fibers full bluish reds of excellent fastness to light. It dyes level and exhausts well and is to be considered for combination shades.

American Cyanamid has announced the appointment of the National Oil & Supply

Co., Newark, N. J., as the North Jersey distributors of Aero Brand disodium phosphate, trisodium phosphate and aqua ammonia.

Archer-Daniels-Midland Co., has announced that it is now engaged in the production of soy bean oil. During the last year it has made considerable changes and improvements in its Chicago and Toledo plants and is at present running both of these mills on soy beans.

Krupp Nurosta Co., New York has announced that fifty-one steel producers have agreed to standardize specification symbols for chrome-nickel steel produced within agreed analysis ranges. Copies of the new specifications may be obtained from the company at its New York offices, 2638 New York Central Building.

Robinson, Butler, Hemingway have removed their executive offices from New York City to Boundbrook, N. J. where the plant and research laboratories are located.

R. & H. held a special safety show at the Capital Theatre, Dec. 16, 17 and 18 for its employees. The last night was featured by the presentation of 25-year service awards by Dr. H. R. Carveth. Dr. Carveth made a short address felicitating M. Murphy, S. A. Adams and Charles Pirie, and presented them with handsome watches suitably inscribed as a token of esteem.

The entire theatre program was arranged and supervised by John Faill, Chemist, L. F. Auman, Labor Superintendent and Arthur Volkman.

Dr. Edward R. Weidlein, Director, Mellon Institute of Industrial Research, has announced that the institution has lately begun a broad investigation into possible industrial uses for raw and refined sugar. The research will be carried on by a Multiple Industrial Fellowship that will be sustained by The Sugar Institute, Inc., of New York, an organization that represents the cane sugar refiners of the United States.

According to Dr. Weidlein, various studies made by private research workers have already indicated results of industrial promise; these findings will be carefully studied in the laboratories of Mellon Institute. Most of these proposals relate to applications for sugar in such technologic practices as wood preservation, textile finishing, and the manufacture of adhesives. Sugar is thought to merit searching investigations as a basic raw material for employment in various branches of chemical industry.

Personnel

Pierre S. du Pont, chairman of E. I. du Pont de Nemours & Co., was elected a director of the Pennsylvania Railroad, at a special meeting of the board, to succeed the late A. W. Thompson of Pittsburgh.

James G. Vail, chemical director of the Philadelphia Quartz Company recently addressed the Rhode Island section of the American Association of Textile Chemists and Colorists at Providence.

H. A. Hoffman, formerly with the B. F. Goodrich Company and more recently chief chemist for the Mason Tire & Rubber Corporation, has joined the technical organization of the Roessler & Hasslacher Chemical Company, this city.

Effective January 1, 1931, Mr. R. L. Cathcart has been appointed District Sales Representative of the Zinc Oxide Department of the St. Joseph Lead Company, with headquarters at the Oliver Building, Pittsburgh, Pa.

John Smeaton, formerly connected with Stein Hall and Company, is now associated with the Borden and Remington Co. Mr. Smeaton will be active in the promotion of sales of starch products.

W. G. MacCourt, Anglo-Chilean Nitrate Sales Corp., New York City, has been made field representative of the company with headquarters in New York. He has just returned from Europe.

H. L. Derby, president of the Kalbfleisch, has been elected a vice president of the American Cyanamid Co.

John Boyer, who recently resigned as vice-president in charge of sales, Monsanto, is now associated with The Calco Chemical Co., Inc.

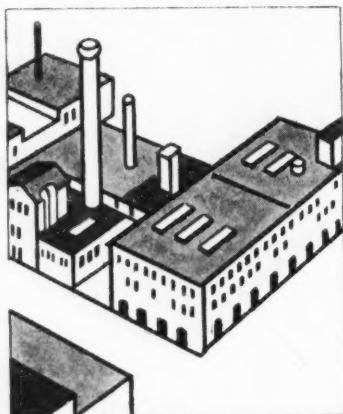
Thomas W. Bacchus, vice-president of the Hercules Powder Co., was the honored guest at a bon voyage dinner given by about sixty officers and members of the Hercules Powder Company at the Country Club, Thursday evening, Dec. 11. He is leaving shortly for a trip around the world.

Frederick O. Anderegg, Ph. D., formerly associate professor of physical chemistry at Purdue University and more recently Senior Industrial Fellow at the Mellon Institute of Industrial Research, in charge of investigations of Portland Cement and

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STAUFFER'S record of forty-five years in the production and distribution of industrial chemicals is a record of dependable and unfailing service to industry. This record has been made possible through STAUFFER'S endeavor to serve each of the industrial centers as a unit, achieving thereby highest efficiency in distribution and lowest costs in transportation.

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Borax Union, Inc.,
Companie Europeene de Traitement des
Minerais
Suddeutsche Chemische Werke
Compania Azufrera del Noroeste de
Espana

masonry, announces the opening of a consulting practice on building materials including Portland cement, cement products and masonry at 206 Fulton Bldg., Pittsburgh, Pa.

Prof. Victor K. LaMer of the department of chemistry, Columbia University, will be visiting professor at Stanford University during the Spring session of 1931. He will direct courses in physical chemistry and catalysis.

Theodore Swann was in Washington recently to report to the President as chairman of Alabama's Emergency Employment Commission to present a report on unemployment prepared by Alabama's Industrial Development Board, of which he is the leading official. He was also recently named president of the Birmingham Post of the Army Ordinance Association.

Charles F. Kelly has resigned as manager of sales of photographic and fine chemicals for the Newport Chemical Works (Rhodia division).

Mr. Kelly was sales manager for the Rhodia Chemical Co. for several years prior to its purchase by Newport in June 1929. He was formerly sales manager for Monsanto, from 1917 to 1920, and before that had been sales manager for Ralph L. Fuller & Co., New York, following thirteen years as sales representative for Parke, Davis & Co., Detroit.

The late Lord Brotherton left an estate valued at approximately £1,750,000. Following his death, it was thought that his fortune was some where in the neighborhood of £10,000,000.

Elmer E. Brown, Chancellor of New York University has announced that a bequest of \$2,000,000 was made to New York University in the will of the late Dr. William H. Nichols, founder of the Nichols Copper company.

Dr. Charles L. Reese, formerly director of the Chemical Department of the du Pont Company and more recently its chemical consultant, retired from active service with the company on January 1.

Dr. Reese is one of the most prominent men in the present day chemical field, both in this country and abroad. He has been importantly identified with nearly all of the organizations of chemical workers, having served at various times as president of several of the outstanding associations and societies.

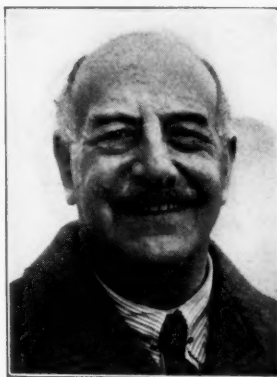
He came with the du Pont Company on June 1, 1902, as chief chemist at the

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Repauno Works. He then became director of the Eastern Laboratory and later was in charge of the chemical division of the High Explosives Operating Department. When, in 1911, it was decided to establish a general chemical department for the entire company, he was chosen as its directing head and remained in that position until May, 1924, when he retired to become the company's consultant.

Obituaries

Alfred Moritz Mond, more widely known as Lord Melchett, chairman of Imperial Chemical Industries, Ltd., and one of the leaders of British industry, died Dec. 27, aged 62. Born in Lancashire, England, the son of Dr. Ludwig Mond, one of the founders of Brunner, Mond & Co., Ltd., he was trained for the bar, but early forsook the law for business. When Dr. Ludwig Mond died in 1909, Alfred Mond took over the administrative side of the business and added to the acid manufacturing activities of the company, nickel mining, metal manufacture, coal mining and gas manufacture. He became successively chairman of Brunner, Mond, chairman of the Mond Nickel Co., Ltd., and finally chairman of the Imperial Chemical Industries, Ltd. After the War, during which his companies made great



Lord Melchett

quantities of war materials, he founded several new companies, among them being Synthetic Ammonia and Nitrates, Ltd. He was an important figure in British politics and active in the Zionist movement. He was created first Baron of Landford in 1928, a title to which his son, Henry Mond, will succeed.

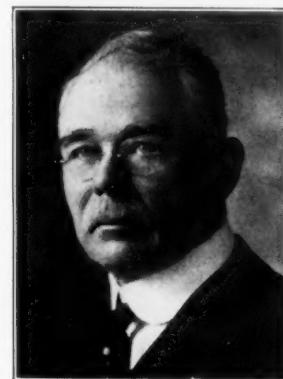
Benjamin Lindley Murray, chief chemist in charge of the control laboratory, Merck & Co., Inc., died Dec. 12, aged 60. Born in Ypsilanti, Michigan, he was graduated from the University of that state and later received the degree of M. A. from Columbia University. He was associated with Merck & Co. for thirty-four years, and had been chief



Benjamin L. Murray

chemist for many years. He was the author of "Standards and Tests for Reagent and C. P. Chemicals," and had served on the Committee of Revision of the U. S. P. X.

Willis Zebulon Georgia, secretary-treasurer and general manager of the Buckhannon Chemical Co., Olean, N. Y., died Dec. 8, aged 72. In 1902 he organized the



Willis Z. Georgia

Eldred Powder Co., which was sold to the du Pont interests in 1909. He was already associated with the Buckhannon Company, which manufactures wood chemicals, and he became its secretary and general manager in 1910. He was also president of the Wood Distillers Corporation, and a member of the board of governors of the National Wood Chemical Association, and a director of its successor, the Wood Chemical Institute.

Coming Events

American Ceramic Society, Cleveland Auditorium, February 22 to 28.

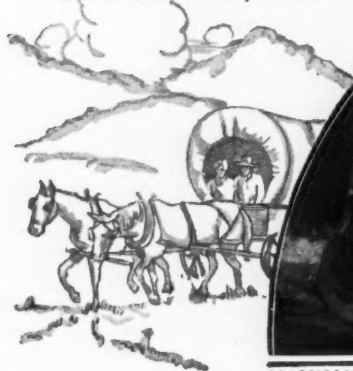
American Chemical Society, 81st meeting, Indianapolis, March 30-April 3.

American Institute of Chemical Engineers, Swampscott, Mass., June 1.

Electrochemical Society, spring meeting, Birmingham, Ala., April 23-25. Hotel Tutweiler.

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when Eugene Grasselli crossed
the Alleghenies and established
the first Grasselli plant . . .



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with our nation-wide organi-
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plants from coast to coast



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This twelvemonth of 1931 sees us rounding into the ninety-second year of our long and conspicuous service to the chemical needs of American industry. Throughout this long span of years, the measure of prestige and leadership we have achieved in industrial chemicals, has come as the result of incessant and undeviating watchfulness of our customers' interests. They always and unvaryingly come *FIRST*.

In the trade, we are frequently referred to as "Headquarters for Industrial Chemicals". If we have won that enviable position (and we believe we have) it has been the consequence of that priceless ingredient of business—*Service First*.

What are your chemical requirements? May we have the privilege of serving *you* this year?

*Our Research Department may be of help in solving
some of your problems. This service is available to you.*

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Chile Nitrate Conferences

Important conferences were held in New York during the past few weeks and are to be continued in January between representatives of the Compania de Salitre de Chile, (Cosach), and international banking interests. The object, a loan necessary to successfully carry through the provisions of the recent Chilean combination of nitrate interests, aroused the ire of Francis P. Garvan, president of the Chemical Foundation, who sent a letter to a large number of financial institutions urging them to refuse financing or loans to the Chilean Government and the "Chilean-German Nitrate Cartel."

Mr. Garvan's letter reads, in part: "Have information that banks of country are about to be asked to loan \$100,000,000 of their wards and depositors to the Chilean Government and the Chilean-German Nitrate Cartel."

Request you not to foster this attempt to send our funds to aid German and Chilean interests in destroying our nitrate industry, which is the backbone of our national defense and agricultural progress."

The two principal parties in the negotiations are the Guggenheim interests, representing the Anglo-Chilean Consolidated Nitrate Corporation, the largest individual company in the national merger, and the delegates from the Chilean Government who are serving really in the dual capacity of representatives of both the Chilean government and the "Cosach."

Current conversations center naturally on the final steps for formation and operation of the nitrate combine, to be capitalized at \$375,000,000 and comprising 95 per cent of nitrate production in Chile. Enabling legislation has been passed in Chile and twenty-eight companies interested in the industry have approved the plan, the essential feature of which is that the Chilean government becomes the dominant factor and largest shareholder in the industry in return for, first, a reduction and later complete cancellation of the Chilean export tax on nitrate and products.

One of the most important matters to be settled, before the formation of the company had virtual nationalization of the nitrate industry in Chile, is the price which the new company will pay for the Guggenheim patent processes for extracting nitrates from ore.

It is understood a tentative proposal may be suggested to the Chilean delegates, calling for the return of the earnings of the nitrate companies to their businesses for the next year, instead of the payment of \$22,500,000 of it to the Government as part compensation for the remission of the export tax on nitrates and iodine. For the Government's immediate compensation, and to provide it with funds for expenses while the tax is inoperative and nothing is received from the companies, it is understood there will be a proposal for a direct Chilean Government bond issue. Amortization of these bonds would take place with funds paid in by the nitrate companies as they achieve larger earning capacity.

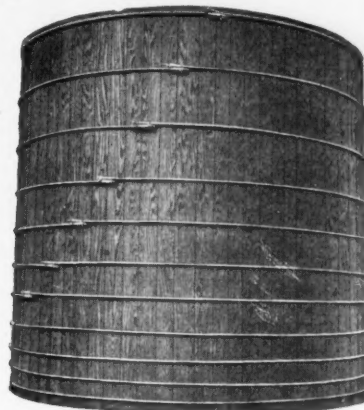
According to a report made to Congress by Secretary Mellon and released on Dec. 27, individuals, corporations and others received an aggregate of \$126,836,333 in taxes illegally or erroneously collected by the Bureau of Internal Revenue during the fiscal year, 1930.

Among the names of chemical companies listed were the following:

New York, Second District: Air Nitrates Corporation, \$282,615; Allied Chemical & Dye Corporation, \$102,273; American Linseed Co. and subsidiaries, \$646,279; American Maize Products Co., \$129,077; Chile Copper Co., \$156,470; William S. Gray & Co., \$272,401; New Jersey Zinc Co., \$58,173; Roessler & Hasslacher Chemical Co., \$69,045; Vacuum Oil Co., \$99,472; Vanadium Corporation of America, \$62,436; West Virginia Pulp & Paper Co., \$87,572. New York, Third District: Middle States Oil Corporation, \$453,289; United States Industrial Alcohol Co., \$111,775. New York, Twenty-first District: Semet-Solvay Co., New York City, \$206,856. New York, Twenty-eighth District: Eastman Kodak Co., of New Jersey, Rochester, \$3,416,218.

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The Financial Markets

Upward Turn in Stocks Follows Deep Decline—New Financing by Big Chemical Companies—Listings and Applications to List—Financial News of the Chemical Companies.

After a vertical decline extending over a period of two weeks, at which time many of the leading chemical stocks repeatedly registered new lows, the market suddenly turned on the 17th and staged one of the most vigorous rallies of the year. Indicative of the seriousness of the decline, were the number of lows made on the two days preceding the upward swing. On the 15th, 403 and on the 16th, 409 new lows for the year were recorded, while on the morning of the 17th, 350 lows were reached before the turn.

The bullish market was however of short duration. On the 18th, bonds experienced a rally in sympathy with the better tone in stocks, but by the end of the week the market was again in the doldrums with prices irregular and generally lower in the face of light trading. From this point on to the close of the month, trading was very restricted. In many instances, not only were the gains recorded during the abortive rally of the middle of the month dissipated entirely, but new lows again made.

Chemical Stocks

In the chemical list, Allied Chemical & Dye showed a net loss of 25 points from Dec. 6th to the 27th., the closing prices for the four successive Fridays being as follows, 203, 184, 188½, and 178. Examination of ten representative stocks of the industry, as given below, not only fails to show a net gain in any instance, but clearly pictures the continued severity of the decline. As the month closed the inability of the copper refiners to maintain the earlier price increases had a very detrimental effect on the whole list. Combined with the adverse report of surplus stocks of petroleum, the competitive alkali situation and the depressed tone of

the news generally, it is not at all surprising that the month ended with prices dragging bottom. In a great many instances the closing prices for the month and the year were at, or uncomfortably close to, the low for the twelvemonth period, despite a rather belated rally on the last two days of the year.

New Financing

Several large chemical companies entered the financial headlines of the month, Columbian Carbon listing 40,000 additional voting trust certificates for the purchase of a controlling interest in Frederick H. Levey Co. Inc., one of the country's oldest ink manufacturers, American Solvents listing 50,000 shares of common stock in a refinancing plan of its molasses units, and Allied Chemical listing 114,349 shares of common to take care of the 5% stock dividend declared recently. Newport petitioned the "big board" during December for permission to list its outstanding stock. At present Newport common has been traded in only on the Curb. Early in the month Diamond Match declared the new plan of recapitalization and refinancing in effect. One of the most interesting developments of the month was the rumor that financial control of International Nickel had again reverted to American interests.

Foreign Financing

In the foreign field of chemical finance, the month was rather barren of news. The American publicity agents of the I. G. announced that the report current a month ago concerning the passing of the current dividend is unfounded and no action of any kind is possible until the Directors meet early in the Spring. Little

surprise was felt in financial and chemical circles at the report of the receivership of the Stickstoff-Werke A. G., better known as the Waldenburg Nitrate Works. It had been rumored on several occasions during the year that difficulties were being experienced by the management. As to what effect the death of Lord Melchett will have on the financial structure of the I. C. I. it is impossible to say at the moment. Certain it is that his foresight and leadership in financial matters will be sorely missed by the English chemical industry.

Losses

Figures released by the Stock Exchange during the month indicated a loss in value of \$1,713,850,914 between November 1st and December 1st. In connection with this report it is to be observed that the value of chemical stocks is second only to three other industries, petroleum (which might very easily be considered as being chemical), railroads and equipment, and communications. The value of chemical stocks listed as of November 1st, was \$4,016,020,511, as compared with \$3,993,018,769 as of December 1st a loss of \$23,011,742.

N. Y. Stock Exchange News

Listings

Allied Chemical & Dye Corporation, 114,349 additional shares of common stock without nominal or par value.

Indian Refining Co., certificates of deposit for 1,270,122 shares of common stock (\$10 par value). Applications to List.

Applications

American Solvents and Chemical Corporation, 50,000 additional shares of common stock without nominal or par value.

Columbian Carbon Company, voting trust certificates for 40,000 additional shares of capital stock without nominal or par value.

Monsanto Chemical Works, 6,341 additional shares of common stock without par value.

The Newport Company, 618,928 shares of common stock without par value.

Standard Oil Company of California, 256,920 additional shares of capital stock without nominal or par value.

Price Trend of chemical company Stocks

Name	December 6	December 13	December 20	December 27	Net Change
Allied Chemical.....	203	184	188½	178	—25
Air Reduction.....	103	98¼	101	95¼	—7¾
Anaconda.....	35½	31½	26¼	28	—7½
Columbian Carbon.....	88½	79¼	77½	73½	—14¾
Commercial Solvents.....	17½	15½	16½	15	—2½
Du Pont.....	88½	85½	87½	85	—3½
Standard, N. J.....	53¼	50	47½	46½	—6½
Texas Gulf Sul.....	51½	49	46½	45¼	—6¼
U. S. Ind Al.....	63	58	58	55	—8

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Stricken from List

Tennessee Copper & Chemical Corp. common stock.

Tennessee Corp. change of name from Tennessee Copper & Chemical Corp. common stock without par value.

International Nickel Company of Canada, Ltd., temporary certificates for common and preferred stocks. (Permanents are listed.)

DuPont Stock

E. I. du Pont de Nemours & Co., announces 1931 stock investment plan offering its debenture stock to employees at \$117 a share. Subscriptions may be made on the monthly payment plan or they may be paid in full. Any employee of the parent company or its subsidiaries having one year or more of service and receiving not more than \$6,000 a year is eligible to participate. Subscriptions may be made for stock at the subscription price to an amount not exceeding 20 per cent of the subscriber's salary, but in no case to more than ten shares.

The company, the announcement says, has two objects in view in offering the plan—"to secure a wider employee-ownership in the business and to encourage employees in the accumulation of income-producing property."

Under the plan the company reserves the right to limit the subscriptions to 8,000 shares. If there shall be an over subscription, and if this right be exercised, subscriptions will be filled in ascending order of the subscribers' rate of wages or salary.

Aluminum Rights

Aluminum Ltd., is offering stockholders of record December 15 right to purchase one new share at \$30 a share for each eight held. As stock is currently selling around \$75, rights have a value of about \$5. Full share warrants will be of four kinds: A—Expiring July 2, 1931; B—Expiring October 1, 1931; C—Expiring January 2, 1932, and D—Expiring April 1, 1932.

Solvent Financing

American Solvents & Chemical Corporation it is reported enters into a deal whereby its commitments for high priced molasses are cancelled and arrangements made for its future molasses supplies on a more favorable basis.

When American Solvents acquired the Rossville Commercial Alcohol Corporation and the General Industrial Alcohol Corporation earlier in the year, it also took over, under agreement with the latter concern, two molasses companies, namely, the Molasses Distributors Corporation and the Manard Blackstrap Co., Inc.

According to a statement by the American Solvents, these molasses units are no longer required in the operation of the company, and therefore the fixed property and assets of the Molasses Distributors Corporation, and all of the issued and outstanding stock of the latter company as well as of the Manard Blackstrap Co. are to be turned over, along with cash, to the interests who entered into contracts with American Solvents on a high-priced basis.

In connection with this deal American Solvents has requested permission to add 50,000 additional shares of common stock to take care of the necessary financing.

Nickel Control

International Nickel Co. of Canada, Ltd., stock control may again be in the hands of American interests through heavy purchases of securities in recent months, it is reported in financial circles. Acquisition of large block of stock formerly held in Canada is reported to have been a factor in the change of control of the company. With recent depression in stock market, bringing price of stock below \$20 a share, it was said that much buying had been done by American interests.

Control of the company would require approximately 7,600,000 voting shares, but it is generally thought that a much smaller amount of stock than 51 per cent insures effective control of a company because of the number of shares in the hands of small investors who are often quite willing to send in proxies and vote with the management.

Canadian interests were heavy buyers of Nickel prior to the merger of the company in 1928 with the Mond Nickel Co., Ltd. of London after which the International Nickel Co. of Canada, Ltd., was formed as successor to the International Nickel Co. of New Jersey.

Diamond Match

Diamond Match Co. declares new plan of recapitalization and incorporation operative when it is announced that more than 97 per cent of the outstanding stock had been deposited in favor of the change.

The plan provides for the exchange of each share of present capital stock for five shares of new \$25 par 6 per cent cumulative participating preferred stock and four shares of new no-par common stock. On consummation there will be outstanding 850,000 shares of new preferred and 700,000 shares of new no-par common stock. In addition an agreement has been made to sell 350,000 shares of new common stock for \$13,000,000, or more than \$37 a share, and a part payment of \$4,000,000 has been placed in escrow, pending consummation of the plan.

The date for consummation of the plan has been extended to Jan. 15. Exchanges of new stock for the present shares and deposit certificates will be made as soon after Jan. 1 as possible.

Stickstoff A. G. Fails

Stickstoff-Werke A. G., Waldenburg, or the Waldenburg Nitrate Works, which was organized at the beginning of 1929 with 8,000,000 reichsmarks capital for the purpose of utilizing low value coal in the Lower Silesian territory with improved processes is placed in the hands of receiver.

Since 1929 the company has met with several reverses, foremost of which were delays in completion of plant, miscarriage of plans for international financing, and an explosion at its plants during October of this year.

The planned capacity of its nitrogen undertaking was 22,000 metric tons annually, but its present capacity does not exceed 15,000 tons in terms of pure nitrogen. The Ammonium A. G. in Zurich has an interest in the company.

Total liabilities of the Waldenburg company amount to approximately 20,000,000 reichsmarks, one-half of which consists of bank credits secured by mortgage. The remaining half largely represents unsecured indebtedness to firms from whom they have been obtaining their supplies.

"Oswag," the Polish-German chemical interest, formally applied for moratorium because of declines in nitrogen prices and because of a breakdown in negotiations for financing.

Buys Levey Ink

Columbian Carbon Company, through the listing of 40,000 additional voting trust certificates announces the acquisition of the capital stock of the Frederick H. Levey Co., Inc. The additional stock provides for the acquisition of substantially all of the outstanding capital stock of the Frederick H. Levey Company, on the basis of nine shares of Columbian stock for each ten shares of Levey stock. An agreement has been executed by the Columbian company and stockholders owning approximately 47,500 shares of the Levey stock, of a total of 50,000 shares authorized and outstanding. The Levey Company was organized in 1874 to continue the business of the Continental Ink Company. The company manufactures printing inks, in which pigments produced by the Columbian Carbon Company are important ingredients. Total assets of the Levey Company on June 30 were \$1,814,901.

Newport Lists Shares

Newport Co. announces the listing of 618,928 shares of the company's common stock. This issue has not been listed on the Stock Exchange before; 66,722 shares are to be listed on official notice of conversion of 33,361 shares of Class A convertible stock, and 30,986 shares are to be listed on official notice of issuance under the stock purchase plan for employees. The balance has been outstanding.

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Earnings reports, according to the *Wall Street Journal*, compared with those for the corresponding periods of a year ago, and dividend announcements by leading companies since October 1, are as follows:

	<i>Since Oct. 1</i>
Increased earnings.....	283
Decreased earnings.....	503
Unchanged dividends.....	1,019
Increased dividends.....	102
Decreased dividends.....	83
Omitted dividends.....	114



Saturday Evening Post
Isn't It Time to Discontinue Seances ?

Company Reports

General Refractories Statement

General Refractories Co. statement as of September 30, 1930, shows total assets of \$25,757,758 comparing with \$22,011,368 on September 30, 1929, and capital stock and surplus, represented by 300,000 no-par shares, of \$22,337,534 against \$21,495,405. Current assets on September 30 this year amounted to \$5,768,905 and current liabilities \$3,420,223 comparing with \$5,360,149 and \$515,963 respectively on September 30, of previous year.

Balance sheet of General Refractories Co. as of September 30, 1930, compares as follows:

Assets		1930	1929
†Property, eqpt., min lands, etc.		\$18,502,211	\$15,211,738
Cash		495,362	1,002,568
Bills receivable		273,658	60,765
Accounts receivable		1,600,928	1,519,585
Inventories		3,195,507	2,735,214
Market securities		170,212	—
Accrued interest		33,240	42,021
Empl mortgages		1,991	1,389
Miscellaneous investments		824,629	978,143
Deferred accounts		622,928	426,426
Patents		37,092	33,519
Total		\$25,757,758	\$22,011,368
Liabilities			
Bills payable		\$2,600,000	—
Accounts payable		380,693	\$156,892
Accrued accounts		191,928	197,403
Federal taxes		247,305	161,296
Unclaimed dividends		298	372
*Capital stock and surplus		22,337,534	21,495,405
Total		\$25,757,758	\$22,011,368

*Represented by 300,000 no-par shares. †After depreciation and depletion.

Glidden Shows Net Profit

Glidden Co. and subsidiaries for year ending October 31, 1930, shows net profit of \$11,365 after interest, depreciation, etc., but before preferred dividends of subsidiaries amounting to \$30,000. This compares with net profit in preceding fiscal year, after interest, depreciation and federal taxes, etc., of \$2,959,110, equivalent after subsidiary preferred dividends and dividends on 7% prior preference stock, to \$4.33 a share on average number of common shares outstanding during the year and \$3.57 a share on 681,750 common shares at end of year.

Consolidated income account for year ended October 31, 1930, compares as follows:

	1930	1929	1928	1927
Net sales	\$36,434,052	\$38,319,739	\$26,981,007	\$25,146,503
Oper profit	1,314,607	4,221,864	3,297,713	2,826,633
Int, etc. (net)	669,662	382,728	393,813	492,445
Depr.	633,580	520,526	380,282	371,750
Fed tax	—	359,500	262,500	250,000
Net profit	\$11,365	\$2,959,110	\$2,261,118	\$1,712,438
Pfd. divs. subs.	30,000	17,500	—	—
Pr. pf. divs.	519,841	505,713	487,693	497,850
Com divs (esh)	1,240,763	1,137,147	—	399,247
Deficit	\$1,779,239	*\$1,298,750	*\$1,773,425	*\$815,341
*Surplus	—	—	—	—

Seneca's September Report

Seneca Copper Mining Co. reports for quarter ended September 30, 1930, net loss of \$187,616 after expenses, bond interest, depreciation and depletion comparing with net loss of \$136,884 in preceding quarter and net loss of \$28,425 in third quarter of previous year.

Net loss for first nine months of 1930, totaled \$438,302 after above charges.

Income account for quarter ended September 30, the two preceding quarters and nine months ended September 30, 1930, follows:

	Quar. end Sept. 30, '30	Quar. end June 30, '30	Quar. end Mar. 31, '30	9 mos. end Sept. 30, '30
Total receipts	\$131,985	\$169,313	\$158,560	\$459,858
Expenses	243,928	232,946	206,856	683,730
Oper loss	\$111,943	\$63,633	\$48,296	\$223,872
Interest	25,944	25,944	25,944	77,832
Loss	\$137,887	\$89,577	\$24,240	\$301,704
Depr & depl.	49,729	47,307	39,562	136,598
Net loss	\$187,616	\$136,884	\$113,802	\$438,302

Jan. '31: XXVIII, 1

Montecatini Reduces Dividend

Montecatini Co., dominating chemical combine of Italy, reduces dividend to 15 per cent from 18 per cent paid on the company's shares during 1929, despite the fact that earnings underwent no appreciable change during 1930.

The reduced dividend payment this year is blamed for the "world depression." The complete earnings statement of the chemical combine will probably not be made public until next April.

The Montecatini company is a world factor in the production of copper sulfate and nitrogenous fertilizers. During 1929 the combine's production of copper sulfate amounted to 42,871 tons, compared with 77,179 tons during 1928.

A strengthening of what Montecatini describes as "nitrogen consciousness" in Italy led to sales of 122,660 metric tons of ammonium sulfate in 1929, against 107,500 tons the year before, while sales of ammonium nitrate, calcium nitrate and sulpho-nitrate also gained sharply.

International Printing Ink Corporation votes to omit quarterly dividend of 62½ cents due on common stock, but declared regular quarterly dividend of \$1.50 on preferred, payable February 1 to holders of record January 12.

"Earnings of 1930," Treasurer Chauncey said, "have been adversely affected by the continued drop in certain foreign exchanges due to world conditions, and it was deemed wise to conserve the corporation's asset position. As of November 30, current assets were \$8,522,537 and liabilities were \$1,016,643, the ratio being 8½ to 1. Of the current assets \$2,015,383 were in cash and government securities."

Canadian Industrial Alcohol Company Ltd., Montreal, report for the year ending Sept. 30th, shows a sharp decline in revenue as compared with the previous year. Net profits after depreciation and income tax charges, were \$523,770, as compared with \$2,073,977. Deduction of \$415,307 for dividends, left a surplus for the year of \$108,462, which added to the previous surplus of \$2,096,058, made a total of \$2,204,520. From this was deducted \$243,342, for written off shares in associated companies, leaving a profit and loss balance of \$1,962,178.

Wesson Oil & Snowdrift Co., Inc., and subsidiaries report for quarter ended November 30, 1930, net profit of \$707,313 after depreciation and federal taxes, equivalent after dividend requirements on \$4 convertible preferred stock, to 57 cents a share on 600,000 no par shares of common stock. This compares with \$758,177 or 59 cents a share in November quarter of 1929.

Celanese Corp. of America declares regular quarterly dividends of \$3.50 on the 7% cumulative first preferred stock, payable December 31 to stock of record December 15, and \$1.75 on the 7% cumulative series prior preferred stock, payable January 1 to stock of record December 15.

Texas Corporation extends to January 15 time limit for depositing common stock of Indian Refining Company to be exchanged for stock of the Texas Corporation. The exchange basis is eight shares of Indiana Refining for one share of Texas Corporation.

Corn Products Refining Co. declares extra dividend of 50 cents on common stock in addition to regular quarterly dividend of 75 cents on common, both payable January 20 to stock of record January 5. This brings dividend declarations for 1930 up to \$4 a share on common stock. In addition, regular quarterly dividend of \$1.75 was declared on preferred stock, payable January 15 to stock of record January 5.

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U. S. Smelting Reports Profit

United States Smelting, Refining & Mining Co. reports for 11 months November 30, 1930, net income of \$3,377,751, after interest, taxes and reserves for depreciation, depletion and amortization, equivalent, after dividend requirements on 7% preferred stock, to \$2.93 a share (par \$50) on 620,562 average shares of common stock outstanding during the period. This compares with net income in corresponding period of previous year of \$4,456,448, equal to \$4.97 a share on 586,277 average common shares.

Consolidated income account for 11 months ended November 30, 1930, compares as follows:

	1930	1929	1928	1927
Net after int and taxes.....	\$6,017,170	\$6,567,315	\$5,584,422	\$4,864,309
Depr. deplet. and amortiz'n.	2,639,419	2,110,867	1,975,494	2,164,374
Net income.....	\$3,377,751	\$4,456,448	\$3,608,928	\$2,699,935
Pfd divs.....	1,560,373	1,560,373	1,560,373	1,560,373
Surplus.....	\$1,817,378	\$2,896,075	\$2,048,555	\$1,139,562

Earnings of Federal Mining

Federal Mining & Smelting Co. reports for quarter ended October 31, 1930, net earnings of \$266,672 before depreciation, depletion and taxes, comparing with \$273,650 in preceding quarter and \$785,780 in October quarter of previous year.

During the quarter ended October 31 Federal Mining & Smelting Co. shipped 32,688 tons of concentrates compared with 31,671 tons in preceding three months and 40,412 tons in the three months ended October 31, 1929.

Highest price obtained for lead in the three months ended October 31 was 5.5 cents a pound New York and lowest 5.1 cents. For silver highest price was 37 cents and lowest 34¼ cents an ounce New York. For zinc lowest price was 3.95 cents a pound St. Louis and highest 4.5 cents.

• • •

Lautaro Nitrate Co., Ltd., reports for year ending June 30th. last gross profits obtained from the sales of nitrate, iodine, etc., are £747,815 against £963,772 a year ago.

After providing for general expenses, oficina closing and stoppage expenses, taxes and interest on advances amounting in all to £297,008 interest on debentures £141,207, repairs £22,263, and depreciation £254,794, there is a net profit of £32,542, in contrast with £294,852. Adding the balance carried forward, and deducting the amount of dividend No. 66 on preferred shares, £280,000, there remains £402,299 to be carried forward.

• • •

Link Belt declares quarterly dividend of 60 cents a share on the common, placing the stock on \$2 annual basis against \$2.60 previously paid. The dividend is payable March 1, 1931, to stock of record February 15. In addition the company declared its regular dividend of \$1.62½ on the preferred, payable January 2 to stock of record December 16.

• • •

Ohio Leather Company declares dividend of \$5 on the second preferred stock on account of accumulation, and the regular quarterly dividends of \$2 on the first preferred and \$1.75 on the second preferred, all payable January 2 to holders of record December 22.

• • •

National Gypsum declares dividend of \$1 a share on \$7 cumulative preferred stock, payable January 2, 1931, to stock of record December 22. Dividends in arrears, after payment of this dividend amount to \$20 on the stock. This is first dividend in three years.

• • •

Archer Daniels Midland Co. reports directors and officers were reelected at annual meeting.

Jan. '31: XXVIII, 1

United Carbon Dividends

United Carbon Co. declares dividend of 25 cents on the common stock and the regular semi-annual dividend of \$3.50 on the preferred stock, both payable January 1 to stock of record December 15.

Declaration of dividend of 25 cents on United Carbon common brings total distribution in dividends on this stock out of 1930 earnings to \$1.75 a share. Under the participating provisions of 7% preferred stock, the issue is entitled to receive, after payment of \$1.75 a share on common from any one year's earnings, four times any additional payment on the junior stock.

Thus, if for last quarter of 1930 directors had declared a dividend of 50 cents on the common, it would have called for the payment of \$1 a share additional on the preferred. This would have meant drawing on earned surplus, which directors deemed best to avoid.

For the nine months ended September 30 net profit after all charges and reserves amount to \$676,443, the company reporting for the third quarter net of \$208,214 after all deductions. Earnings in the current quarter will likely approximate those in the third quarter, so that net profit for this year would be \$876,000 after all charges. Allowing for \$7 in dividends on the preferred stock, of which 18,978 shares were outstanding at the end of September, against 19,694 shares June 30, the balance would be equal to approximately \$1.85 a share on the 397,885 shares of no par common stock outstanding September 30. This shows the earning power on the common before application of the participating provisions of the preferred stock, which the company has been steadily reducing.

Any increase in activity in rubber tire manufacture should result in larger carbon black sales. Negotiations are going forward to expand natural gas consumption in St. Louis and their completion would mean doubling of the flow of gas through Mississippi River Fuel Corp.'s pipe line, in which United has an important interest.

United Carbon's latest drilling activities on properties this year acquired in eastern Kentucky have had encouraging results. Recently the gas flow from one well was gauged at 3,000,000 cubic feet daily, while another metered a flow of 4,500,000 cubic feet daily. This compares with an average in that territory of 250,000 to 500,000 cubic feet flow per well per day.

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Midwest Refining Company votes a \$9,000,000,000 dividend. The company announced to-day an extra dividend of \$14 a share had been declared on the 624,081 shares of outstanding stock, payable on Dec. 22 to stock of record of Dec. 19.

The Standard Oil Company of Indiana owns 99.33 per cent of the Mid-west stock. Standard's share in the dividend amounts to approximately 50 cents a share on its outstanding stock.

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Spencer Kellogg & Sons, for the 12 weeks ended November 22, reports net profit of \$122,596 after charges and Federal taxes.

Over the Counter Closing Prices

Dividend	November 28 1930		December 31 1930	
	Bid	Asked	Bid	Asked
\$1.20 Baker, (J. T.) Chemical, com.	12½	14½	10	14
2.00 Bon Ami B com.....	41	41	30	37
8.00 Dixon (Joseph Crucible).....	130	145	129	138
..... Dry Ice Holding Corp.....	47	47	30	45
8.00 Merck Corp. pfd.....	76	80	72	77
7.00 Okonite, pfd.....	79	84	77	82
..... Petroleum Derivatives.....	4½	8	3	6
..... Solid Carbonic Ltd.....	9½	11½	7½	9
..... Southern States Oil.....	4	4	4	4
..... Standard Textile Products.....	38	38	2	2
5.00 Worcester Salt.....	88	93	87½	92

Chemical Markets

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The Industry's Stocks

1930 Dec.						Sales		ISSUES	Par \$	Shares Listed	An. Rate	Earnings		
High	Low	Last	1930 High	Low	1929 High	In Dec.	During 1930					\$-per share-\$	1929	1928
NEW YORK STOCK EXCHANGE														
106	87	97	156	87	223	77	164,400	2,010,000	Air Reduction.....	No	770,000	\$3.00	5.63	4.61
207	170	175	343	170	354	197	139,875	886,275	Allied Chem. & Dye.....	No	2,286,000	6.00	12.60	11.12
124	120	121	126	120	125	118	2,500	16,500	7% cum. pfd.....	100	393,000	7.00	76.84	68.63
2	1	1	10	1	23	4	5,500	156,700	Amer. Agric. Chem.....	100	333,000		Nil	1.59
23	18	39	18	73	18		2,700	55,500	6% cum. pfd.....	100	285,000		2.47	7.86
12	9	9	33	9	55	20	33,200	246,300	Amer. Com. Ale.....	No	382,000	1.60	4.78	3.39
21	13	17	51	13	81	31	51,450	371,950	Amer. Metal Co., Ltd.....	No	868,000	3.00	3.23	3.58
90	90	90	117	90	135	106	100	3,800	conv. 6% cum. pfd.....	100	69,000	6.00	47.53	26.52
55	37	41	79	37	130	162	182,445	1,319,245	Amer. Smelt. & Refin.....	No	1,830,000	4.00	10.02	8.24
133	131	132	141	131	16	15	1,650	14,650	7% cum. pfd.....	100	500,000	7.00	43.86	37.17
4	2	2	22	2	92	25	10,000	293,300	Amer. Solvents & Chem.....	No	181,000		2.56	1.69
6	3	17	3	4	49	7	51,260	330,300	conv. \$3 cum. pfd.....	No	113,000	3.00	8.01	6.71
29	29	29	79	29	111	49	14,200	330,300	Amer. Zinc. Lead. & Smelt.....	25	200,000		11 mo. 0.76	Nil
37	25	30	81	25	140	70	900	31,000	6% cum. pfd.....	25	97,000	6.00	11 mo. 7.41	5.99
17	13	15	29	13	49	18	1,080,835	8,493,110	Anaconda Copper Mining.....	50	8,828,000	7.00	1928 6.63	3.37
22	16	18	51	16	77	30	26,108	288,608	Archer Dan. Midland.....	No	550,000	2.00	3 mo. 0.71	4.02
54	42	45	106	42	140	67	142,784	2,069,784	Atlantic Refining Co.....	25	2,678,000	1.00	6.10	5.58
99	98	98	106	54	106	90	15,200	150,300	Atlas Powder Co.....	No	260,000	4.00	7.66	4.39
1	1	1	1	1	1	4	590	6,070	6% cum. pfd.....	100	90,000	6.00	28.25	18.76
2	1	1	4	1	9	2	4,000	101,300	Butte & Sup. Mining.....	10	290,000	2.00	Nil	0.28
3	2	2	15	2	32	10	9,200	106,500	Butte Copper & Zinc.....	5	600,000		0.34	0.31
15	6	6	45	6	81	45	15,600	141,600	Certain-Feed Products.....	No	400,000		Nil	Nil
53	44	47	64	44	90	40	2,720	9,520	7% cum. pfd.....	100	63,000		9 mo. 11.38	6.77
93	65	77	199	65	344	105	9,800	94,500	Colgate-Palmolive-Peet.....	No	2,000,000	2.50	4.03	2.60
18	14	15	38	14	63	20	74,527	984,827	Columbian Carbon.....	No	457,000	4.00	7.84	6.39
80	65	78	111	65	126	70	294,850	6,119,250	Comm. Solvents.....	No	2,435,000	1.00	1.51	1.32
148	144	148	151	137	144	137	140,950	859,450	Corn Products.....	25	2,530,000	3.00	5.49	4.35
17	10	14	43	10	69	21	590	10,390	7% cum. pfd.....	100	250,000	7.00	62.59	50.98
18	11	11	42	11	64	24	52,900	578,300	Davison Chem. Co.....	No	504,000	1.00	3.34	1.58
104	103	104	115	99	115	102	7,500	67,400	Devoe & Raynolds "A".....	No	160,000	2.40	4.52	5.95
91	80	86	145	80	231	80	90	670	7% cum. 1st pfd.....	100	16,000	7.00	67.59	64.02
118	116	118	123	114	119	107	464,800	3,631,600	DuPont de Nemours.....	20	10,339,000	4.00	6.99	5.97
168	142	147	255	142	264	150	3,900	47,100	6% cum. deb.....	100	978,000	6.00	78.54	69.06
130	128	128	134	125	128	117	148,090	1,563,990	Eastman Kodak.....	No	2,263,000	5.00	1928 9.60	9.61
33	24	29	55	24	54	23	300	2,360	6% cum. pfd.....	100	62,000	6.00	1928 326.17	326.68
30	22	24	30	22	94	42	67,050	1,223,850	Freeport Texas Co.....	No	730,000	4.00	5.60	4.49
9	7	8	38	7	64	26	32,025	806,125	General Asphalt Co.....	No	411,000	4.00	3.65	2.79
74	63	73	105	63	106	95	45,173	584,673	Glidden Co.....	No	688,000	2.00	3.57	3.55
57	50	55	85	50	130	80	770	75,100	7% cum. prior pref.....	100	74,000	7.00	39.51	32.69
117	116	116	123	116	121	112	3,000	16,900	Hercules Powder Co.....	No	568,000	3.00	5.95	22.04
60	45	57	124	31	135	68	290	3,696	7% cum. pfd.....	100	114,000	7.00	38.16	35.35
4	3	3	8	3	17	4	8,600	114,500	Industrial Rayon.....	No	191,000		7.26	8.68
51	45	46	54	45	88	40	14,600	49,400	Intern. Agric.....	No	444,000		0.79	1.66
19	12	15	44	12	72	25	1,500	36,300	7% cum. prior pfd.....	100	100,000	7.00	10.54	14.47
38	35	37	45	31	80	61	1,011,734	11,971,052	Intern. Nickel.....	No	13,781,000	1.00	1.47	1.05
69	48	53	148	48	242	90	19,900	488,050	Intern. Salt.....	100	61,000	6.00	11.32	7.23
12	8	10	25	8	42	20	127,325	2,025,127	Johns-Manville Corp.....	No	750,000	3.00	8.09	6.75
50	39	41	81	39	113	40	3,300	13,600	Kellogg (Spencer).....	No	598,000	1.60	2.36	3.42
17	11	14	37	10	59	21	20,666	503,066	Liquid Carbonic Corp.....	No	311,000	4.00	6.12	6.76
39	30	32	49	25	63	40	50,400	378,200	McKesson & Robbins.....	No	1,117,000	2.00	6 mo. 1.50	3.77
38	30	31	51	30	72	29	21,150	70,150	conv. 7% cum. pref.....	50	426,000	3.50	6 mo. 5.13	11.51
122	120	122	134	115	125	120	1,400	278,700	MacAndrews & Forbes.....	No	384,000	2.60	9 mo. 2.21	3.30
27	18	21	63	18	80	47	48,510	727,910	Mathieson Alkali.....	No	637,000	2.00	3.31	2.95
26	18	19	39	18	58	15	20	1,120	7% cum. pfd.....	100	28,000	7.00	93.91	84.50
119	114	116	189	114	210	129	10,400	300,400	Monsanto Chem.....	No	404,000	1.25	2.83	3.76
141	135	135	143	135	141	138	33,400	251,700	National Dist. Prod.....	No	275,000	2.00	1.32	Nil
119	118	118	119	116	231	115	5,700	101,800	National Lead.....	100	310,000	5.00	25.49	11.45
43	30	31	55	26	103	143	490	8,190	7% cum. "A" pfd.....	100	244,000	7.00	41.95	24.10
40	33	38	55	26	60	22	260	4,490	6% cum. "B" pfd.....	100	103,000	6.00	82.47	40.34
66	57	62	78	52	98	43	1,200	14,400	Newport \$3 cum. conv. "A".....	50	130,000	3.00	29.79	5.55
11	7	8	27	7	30	20	19,100	604,800	Penick & Ford.....	No	434,000		3.97	2.56
104	90	97	110	90	116	108	68,150	653,500	Procter & Gamble.....	No	33,000	7.00	73.33	53.42
41	37	38	56	36	64	43	193,300	1,171,700	Pure Oil Co.....	25	6,410,000	2.00	6 mo. 1.82	2.96
27	19	25	57	19	94	38	430	9,020	8% cum. pfd.....	100	3,038,000	1.50	3.06	0.97
9	5	7	22	5	31	19	81,900	968,100	Royal Dutch.....		130,000	8.00	40.09	16.82
50	42	45	75	42	31	51	54,200	412,800	St. Joseph Lead.....	10	993,000		1928 24.09%	24.10%
55	43	47	87	43	83	48	162,400	1,062,550	Shell Union Oil.....	No	13,069,000	1.40	9 mo. 1.39	2.04
25	19	22	40	19	48	31	196,316	1,603,816	Standard Oil, Calif.....	No	13,016,000	2.50	1928 3.66	3.15
10	7	8	17	7	20	9	798,350	12,567,725	Standard Oil, N. J.....	25	25,419,000	1.00	1928 4.43	1.52
38	28	31	60	28	71	50	361,223	2,806,123	Standard Oil, N. Y.....	25	17,380,000	1.60	1928 2.28	0.67
53	40	46	67	40	85	42	25,600	371,900	Tenn. Corporation.....	No	857,000	1.00	1928 1.48	0.51
63	52	57	106	52	140	59	327,000	2,152,800	Texas Corp.....	25	9,851,000	3.00	4.91	5.34
25	14	20	84	14	111	40	225,500	1,509,900	Texas Gulf Sulphur.....	No	2,540,000	4.00	6.40	5.72
69	50	64	139	50	243	95	486,448	5,933,748	Union Carbide & Carb.....	No	9,208,000	2.40	3.94	3.79
57	45	52	143	44	116	37	60,300	1,454,400	United Carbon Co.....	No	393,000		1.75	1.99
2	1	2	8	1	24	3	55,260	1,103,660	U. S. Ind. Ale. Co.....	No	373,000	6.00	12.63	10.29
18	9	9	34	9	65	15	1,261,705	9,916,825	Vanadium Corp. of Amer.....	No	379,000	3.00	5.04	4.53
73	67	67	82	67	97	69	12,000	164,900	Virginia Caro. Chem.....	No	479,000		Nil	0.69
26	18	21	59	18	94	30	5,300	70,230	6% cum. part. pfd.....	100	214,000		3.06	7.57
							2,100	48,800	7% cum. prior pfd.....	100	144,000	7.00	12.35	20.09
							6,600	54,700	Westvaco Chlorine Prod.....	No	123,000	2.00	4.32	3.60

NEW YORK CURB

51	51	...	13	31	23	6	700	7,310	Acetol Prod. conv. "A".....	No	60,000		1928	2.27	
70	68	68	70	68	43	15	225	18,325	Agfa Anseo Corp.....	No	300,000			Nil	
168	140	145	356	140	539	146	10,200	64,450	Aluminum Amer.....	No	1,473,000		1928	8.03	5.00
109	92	...	110	92	110	103	1,100	44,100	6% cum. pfd.....	100	1,473,000	6.00	1928	14.04	10.26
75	60	...	232	60	280	99	900	17,540	Aluminum Ltd.....	No	573,000		1928	0.02	
11	6	7	37	6	80	20	209,550	2,362,600	Amer. Cyanamid "B".....	No	1,260,000	1.60		1.56	3.68
14	5	5	43	5	45	1	7,400	239,100	Anglo-Chilean Nitrate.....	No	1,757,000		6 mo.	Nil	Nil
1			6	1	35	3	2,200	17,400	Assoc. Rayon Corp.....	No	1,200,000				
42	31	32	60	31	87	30	4,300	49,000	conv. 6% cum. pfd.....	100	200,000	6.00			

1930 Dec.		1930		1929		Sales		ISSUES	Par \$	Shares Listed	An. Rate	Earnings \$-per share-\$			
High	Low	Last	High	Low	High	Low	In Dec.					During 1930	1929	1928	
1 1/2	1 1/2	1 1/2	5 1/2	1 1/2	10 1/2	3 1/2	1,900	23,300	Brit. Celanese Am. Rets.	105	2,200,000				
63	51	54 1/2	90	51	122	80	2,875	19,300	7% cum. part. 1st pfd.	100	115,000	7.00	15.51	12.00	
75	70	70 1/2	90	60	100	80	625	5,360	7% cum. prior pfd.	100	115,000	7.00	27.02	20.53	
9	7 1/2	7 1/2	20	7 1/2	50	12	820	5,530	Celluloid Corp.	No	195,000		1.29	0.86	
9 1/2	8 1/2	9 1/2	96	70	110	82		1,150	7% cum. 1st part. pfd.	No	24,000	7.00	1928	17.33	9.96
51 1/2	50	50 1/2	100	49	100 1/2	50	1,500	11,000	Courtaulds, Ltd.	1 1/2	24,000,000		1928	19.88%	34.88%
76 1/2	60 1/2	62 1/2	166 1/2	60 1/2	209	115	500	11,500	Dow Chemical	No	480,000	2.00			
4 1/2	4	4	23	11 1/2	41 1/2	17 1/2	78,120	89,120	Gulf Oil	25	4,415,000	1.50	9.83	8.06	
3 1/2	3 1/2	3 1/2	16	3 1/2	27	13 1/2	800	5,200	Heyden Chemical Corp.	10	150,000		1928	2.02	1.02
15 1/2	12 1/2	12 1/2	42	12 1/2	52	21 1/2	200	3,800	Imperial Chem. Ind.	1 1/2			1928	12.15%	10.23%
54	45	48 1/2	79 1/2	45	111 1/2	65	7,300	6,100	Monroe Chem.	No	100,000	1.50	2.54	1.76	
8	3 1/2	4	85	59	105 1/2	75 1/2	1,800	102,100	Newport Co.	No	405,000	2.00	3.28	1.30	
37	30	34 1/2	58 1/2	30	63	45	13,000	4,700	Shawinigan W. & P.	No	1,867,000	2.50	2.35	2.17	
29 1/2	27	28 1/2	34 1/2	27	149 1/2	121 1/2	304,884	1,110	Sherwin-Williams Co.	25	594,000	4.00	7.85	6.99	
6 1/2	3	3 1/2	22 1/2	3	550	111	18,400	121,610	Silica Gel Corp.	No	600,000		1928	8.33	3.26
19 1/2	15	16	...	...	61 1/2	25 1/2	21,210	2,201,384	Standard Oil Ind.	25	13,927,000	2.50	8.71	9.87	
41 1/2	31	36 1/2	58	31	90 1/2	36 1/2		85,600	Swift & Co.	100	1,500,000	8.00			
								83,490	Tubize "B"	No	79,000	10.00			
									United Chemicals	No	120,000	3.00	2.61		
									\$3 cum. part. pfd.	No					
									U. S. Gypsum Co.	20	765,000	1.60	3.98	7.21	
CLEVELAND															
95	95	95	138	93	98 1/2	92	100	4,646	Cleve-Cliffs Iron	No	498,000	5.00	1928	8.41	3.80
62	57 1/2	59 1/2	85	57 1/2	105 1/2	75	2,823	8,252	Sherwin-Williams Co.	25	594,000	4.00		7.85	6.99
CHICAGO															
38	33 1/2	37	46 1/2	33 1/2	26 1/2	12	850	24,165	Abbott Labs.	No	120,000	2.00		4.92	4.00
5	3 1/2	3 1/2	15	3 1/2	26 1/2	12	770	1,430	Monroe Chem.	No	100,000	1.50		2.54	1.76
20	15 1/2	18 1/2	...	...	51	30	470	6,404	\$3.50 cum. pref.	No	30,000	3.50		13.35	10.32
29 1/2	27	27 1/2	33 1/2	27	145	123	15,400	154,000	Swift & Co.	100	1,500,000	8.00		8.71	9.87
CINCINNATI															
66	57 1/2	63	78 1/2	56 1/2	100	44 1/2	7,125	65,243	Procter & Gamble	No	6,410,000	2.00	6 mo.	1.82	2.96
PHILADELPHIA															
...	...	...	...	...	116	89	...	3,300	Pennsylvania Salt	50	150,000	5.00		10.64	8.27
MONTREAL															
1 1/2	1 1/2	1 1/2	...	...	22 1/2	2	1,005	10,818	Asbestos Corp.	No	200,000			Nil	Nil
1 1/2	1 1/2	1 1/2	...	...	68	12	20	3,136	7% non-cum pfd.	100	75,000			0.24	3.35
3 1/2	3	3	12 1/2	2 1/2	45	5	1,769	5,169	Can. Ind. Alcohol "A"	No	969,000	1.52		1.90	2.87
54 1/2	47	49 1/2	82 1/2	49	111	65	26,711	57,111	Shawinigan W. & P.	No	2,178,000	2.50		2.35	2.17

The Industry's Bonds

1930 Dec.			1930			1929			Sales During 1930			ISSUE			Date Due			Int. %			Int. Period			Author- ized \$		
High	Low	Last	High	Low	High	Low	High	Low	In Dec.																	
NEW YORK STOCK EXCHANGE																										
104	102	102½	105½	102	106½	103			89	965	Amer. Agric. Chem., 1st ref. s. f. 7½s.				1941	7½	F. A.							30,000,000		
96	94	94½	100½	93	99½	99½			6	984	Amer. Cyan. deb. 5s.				1942	5	A. O.							5,000,000		
98	95	97½	177	94	135	95			1,198	7,532	Amer. I. G. Chem. conv. 5½s.				1949	5½	M. N.							30,000,000		
102	101	102½	104	101	102½	98			209	3,273	Am. Smelt & Ref. 1st. 5s. "A"				1947	5	A. O.							38,000,000		
76	67	67	98½	67	100	79			227	2,150	Anglo-Chilean s. f. deb. 7s.				1945	7	M. N.							16,500,000		
102	100	102	103	100	103½	99½			86	921	Atlantic Refin. deb. 5s.				1937	5	J. J.							15,000,000		
103	102	102½	105½	100	103	98½			31	435	By-Prod. Coke 1st 5½s. "A"				1945	5½	M. N.							8,000,000		
104½	102	103	104½	97½	103	96½			2	243	Corn Prod. Refin. 1st s. f. 5s.				1934	5	M. N.							10,000,000		
59	38	48	87	38	104	76			536	4,384	Lautaro Nitrate conv. 6s.				1954	6	J. J.									
96	87	89	100	87	100½	96			101	2,422	Pure Oil s. f. 5½% notes				1937	5½	F. A.							20,000,000		
102	96	97	104	93½	98½	90			76	1,188	Solvay Am. Invest. 5s.				1942	5	M. S.									
104	102	103½	104½	100	103½	100			409	5,752	Standard Oil, N. J. deb. 5s.				1946	5	F. A.							120,000,000		
99	96	98½	104	96½	100	91½			398	4,433	Standard Oil, N. Y. deb. 4½s.				1951	4½	J. D.							50,000,000		
97	90	90½	102½	90½	110	88			34	902	Tenn. Copp. & Chem. deb. 6s. "B"				1944	6	M. S.							5,000,000		
NEW YORK CURB																										
103	100	103½	104½	100½	103½	99½			150,000	1,284,683	Aluminum Co., s. f. deb. 5s.				1952	5	M. S.							60,000,000		
98	96	96½	104½	96½	98½	97½			109,000	1,251,500	Aluminum Ltd., 5s.				1948	5	J. J.							20,000,000		
53	51	52	60	51	125	99			10,000		Amer. Solv. & Chem. 6½s.				1936	6½	M. S.							2,200,000		
35	34	...	...	...	...	...			6,000		General Ind. Alc., 6½s.				1944	6½	M. N.							2,500,000
56	51	53	80	51	95	60			78,000	363,138	General Rayon 6s. "A"				1948	6	J. D.							5,400,000		
101	100½	101½	104	90½	101½	97½			145,000	1,263,384	Gulf Oil, 5s.				1937	5	J. D.							35,000,000		
102	99	101½	104	99	...	...			155,000	1,096,342	Sinking Fund deb. 5s.				1947	5	F. A.							35,000,000
102	97	99	103	95½	100	93			161,000	869,631	Koppers G. & C. deb. 5s.				1947	5	J. D.							25,000,000		
93	90	92	98	90½	94½	88½			239,000	1,992,441	Shawinigan W. & P. 4½s.				1967	4½	A. O.							200,000,000		
94	90	92	98	90½	...	...			119,000	4,260,510	4½s., series "B"				1968	4½	M. N.							25,000,000
...	...	...	...	...	...	...			...	130,150	Silica Gel Corp. 6½s.				1932	6½	A. O.							1,700,000
103	102½	102½	103½	79½	102	97½			43,000	416,000	Swift & Co., 5s.				1944	5	J. J.							50,000,000		
103	102	103	103½	100½	104	98			5,000	50,300	Westvaco Chlorine Prod. 5½s.				1937	5½	M. S.							2,500,000		



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The Trend of Prices

IMPORTANT PRICE CHANGES

Advances		December	November
Aluminum Acetate.....		\$0.04	\$0.03
Declines			
Acid, Citric, Crystals.....		.40	.43½
Aluminum Sulfate, com. bags.....		1.25	1.40
Butyl Acetate tanks, wks.....		.16	.175
Candelilla Wax, bags.....		.15	.15½
Carnauba Wax, No. 1.....		.25	.27
Copper metal.....		.10½	.10
Copper sulfate, bbls, wks.....		4.00	4.25
Glycerine, C. P. drums.....		.12½	.03
Gum Benzoin.....		.36	.38
Nickel sulfate.....		.10½	.12½
Saltpeter, crystal.....		.07½	.07½
Tin tetrachloride.....		.18½	.18½

The chemical market assumed its pre-holiday slackness somewhat earlier than usual with trading restricted to small replacement lots. Producers were bending every effort to closing such contracts as remained unsigned. With the exception of the alkali field, where the competitive situation became specially acute in the last ten days of the month, the contract price structure showed remarkable stability after a period of fifteen months of lowered production and sales volume. Broadly speaking contract prices for the current year are at or very close to the 1930 levels.

A few commodities were lower during the month, copper sulfate reacting to the 10c level for copper, was finally reduced ¼c, citric acid 3½c, nickel sulfate (single and double) 2c. In the chlorine field several producers in an effort to stimulate sales introduced a further reduction of ¼c bringing the tankcar price down to the low level of \$1.75 a 100 lb.

It is rather early to obtain accurate figures comparing actual tonnages shipped in 1930 with 1929, but reports from many varied sources would seem to indicate a loss of approximately 15 to 25 per cent. When compared with the other major industries this figure appears quite favorable. In very few instances were contracts written involving lower tonnages for

1931 than were made in the fall of 1929. Sales and profits therefore should be better this year.

The naval stores industry, waxes, fats, and oils, were generally in light demand for immediate shipment but buyers were showing greater inclination towards assuming longer commitments, in some instances as far ahead as six months. Stocks on most of these commodities in the hands of actual consumers are very low and producers were confidently waiting the end of the inventory period for a revival of purchasing on a broad scale.

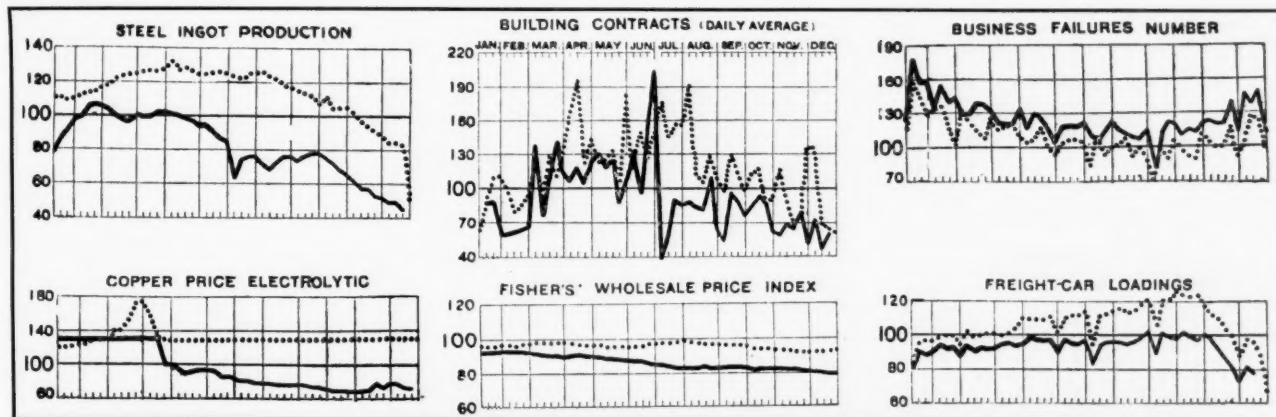
December was a month of disappointment in the business world. While it is

true that retail trade was stimulated with holiday shopping, the total volume of business was below expectations. With prices considerably below the 1929 scale, the margin of profit in most lines cut deeply into profits. The month witnessed several depressing occurrences, including two large bank failures, a fortnight of fresh distressed selling in the stock market, and further foreign political rumblings of unrest in South America and in Europe. In the steel industry, production reached the lowest level of many years, 25 to 30 per cent of capacity. Automobile production appeared to be better due to the manufacture of new models. In the commodity markets, both copper and tin closed at rather firm levels, while raw foodstuffs were better stabilized.

While the news of the month was distinctly bearish whether carloadings, steel production, business failures or retail or wholesale prices were considered a note of optimism was sounded with the coming of the new year. Business leaders generally were unanimous in the belief that the early months of 1931 would show definite signs of trade revival with conditions of trade, employment and stock market values greatly improved.

Indices of Business

	Latest Available Month	Previous Month	Year Ago
Automobile Production, Nov.....	129,437	150,044	217,573
†Brokers Loans.....	\$1,926	1,919	3,424
*Building Contracts, Nov.....	253,573	337,301	391,012
*Car Loadings.....	713	744	842
†Commercial Paper, Nov. 29.....	\$448	\$485	\$581
Factory Payrolls, Nov. 1.....	68.3	72.7	95.1
*Mail Order Sales, Nov.....	\$66,713	\$68,877	\$73,697
Number of Failures Dun, Nov.....	2,031	2,124	1,796
*Merchandise Imports, Nov.....	\$204,700	\$248,000	\$338,553
*Merchandise Exports, Nov.....	\$289,000	\$328,000	\$442,282
Furnaces in Blast % Dec. 1.....	34.1	35.4	55.7
*Steel Unfinished Orders, Nov. 30.....	3,639	3,481	4,125
*000 omitted.			
†000,000 omitted.			



Business indicators prepared by the Department of Commerce. The weekly average 1923-25 inclusive = 100
The solid line represents 1930 and the dotted line 1929

Prices Current

Heavy Chemicals, Coal-tar Products, Dye-and-Tan-stuffs, Colors and Pigments, Fillers and Sizes, Fertilizer and Insecticide Materials, Naval Stores, Fatty Oils, etc.

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f. o. b. works are specified as such. Imported chemicals are so designated. Resale stocks when a market factor are quoted in addition to makers' prices and indicated "second hands."

Oils are quoted spot New York, ex-dock. Quotations

f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f. o. b., or ex-dock. Materials sold f. o. b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both. Containers named are the original packages most commonly used.

Purchasing Power of the Dollar: 1926 Average—\$1.00 - 1930 Average \$1.161 - Jan. 1930 \$1.072 - Dec. 1930 \$1.255

Acetone — Efforts of producers were directed to the closing of such contracts as still remained open. The response from the trade has been encouraging and 1931 contracts already placed compare very favorably with last years' figures. Actual shipments were small as the month closed, due to the desire of consumers to hold inventories to the lowest possible minimum.

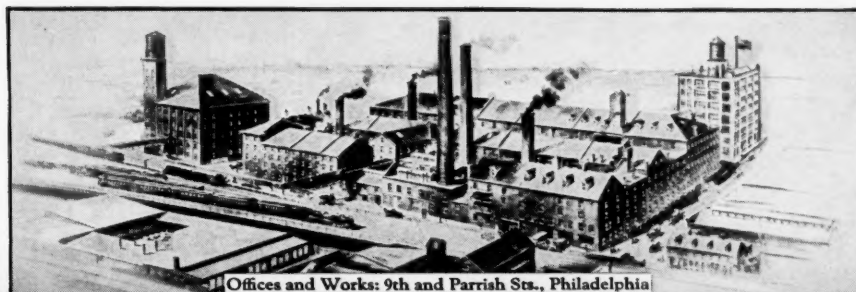
Acid Acetic — Several large inquiries were in the market during the last ten days of the month for 1931 contract prices. Spot sales were specially slow as the year ended, consumers preferring to reduce stocks to the lowest figure at the close of the twelve-month period. With acetate of lime established at the \$2.00 level there appeared little possibility of any further drastic price reductions, despite the fact that natural lime producers carried over into this year the largest tonnages they have been forced to carry in several years. The United States imports of acids for the first ten months of 1930 were 22,555 tons, valued at \$2,994,738, compared with 35,367 tons valued at \$3,908,824 for the same period of 1929. The chief acids imported for the first ten months of 1930 were acetic acid with 9,596 tons, valued at \$1,326,424, arsenious acid with 9,921 tons valued at \$688,239, and tartaric acid with 1,103 tons, valued at \$624,917. The United States exports for the first ten months of 1930 were 8,327 tons, valued at \$847,839, compared with 11,398 tons, valued at \$1,085,287 for the same period of the preceding year. The leading acids exported from the United States were sulphuric acid with 2,362 tons, valued at \$98,790, and boric acid, 1,169 tons, valued at \$103,590.

Acid Citric — On Dec. 13 the prices of both crystals and granular material were reduced and the present schedule is as follows, bbls, 40c, kegs 40½c, powdered a half cent higher in each packing.

Acid Cresylic — Several large contracts for 1931 were concluded at the close of the month. Sales for immediate delivery were small with consumers curtailing production in anticipation of the inventory period.

Acid Muriatic — Producers report that 1931 contracts are entirely closed at prices unchanged from the 1930 level.

	Current Market		1930		1929		1928	
	High	Low	High	Low	High	Low	High	Low
Acetaldehyde, dra 1c-1 wks... lb.	.18½	.21	.21	.18½	.21	.18½	.26	.18½
Acetaldehyde, 50 gal dr... lb.	.27	.31	.31	.27	.31	.27		
Acetamide... lb.	1.20	1.35	1.35	1.20				
Acetanilid, tech, 150 lb bbl... lb.	.21	.23	.23	.21	.24	.21	.24	.23
Acetic Anhydride, 92-95%, 100 lb cys... lb.	.25	.28	.29	.25	.35	.28	.35	.29
Acetic, tech drums... lb.	.30	.32	.32	.30	.32	.30		
Acetone, tanks... lb.	.11	.12	.12	.11	.16	.11	.15	.13
Acetone Oil, bbls NY... gal.	1.15	1.25	1.25	1.15	1.25	1.15	1.75	1.65
Acetyl Chloride, 100 lb cys... lb.	.55	.68	.68	.55	.68	.45	.45	.42
Acetylene Tetrachloride (see tetrachlorethane).....								
Acids								
Acid Acetic, 28% 400 lb bbls c-1 wks... lb.	2.60	3.88	2.60	3.88	3.88	3.88	3.88	3.38
Glacial, bbl c-1 wk... 100 lb.	9.23	13.68	9.23	13.68	13.68	13.68	13.68	11.92
Glacial, tanks... lb.	8.98	13.43	8.98					
Anthranilic, refd, bbls... lb.	.85	.95	1.00	.85	1.00	.98	1.00	.98
Technical, bbls... lb.	.75	.80	.80	.75	.80	.80	.80	.80
Battery, cys... 100 lb.	1.60	2.25	2.25	1.60	2.25	1.60	2.25	1.60
Benzoic, tech, 100 lb bbls... lb.	.40	.45	.53	.40	.60	.51	.60	.57
Boric, cys, powd, 250 lb bbls... lb.	.06½	.07½	.07½	.06½	.07½	.05½	.11	.08½
Broenner's, bbls... lb.	1.20	1.25	1.25	1.20	1.25	1.25	1.25	1.25
Butyric, 100% basic cys... lb.	.80	.85	.90	.80	.90	.85	.90	.85
Camphoric... lb.	5.25	5.25	5.25	5.25	5.25	4.85	4.85	4.85
Chlorosulfonic, 1500 lb drums wks... lb.	.04½	.05½	.05½	.04½	.05½	.04½	.16	.15
Chromic, 99%, dra extra... lb.	.15	.17	.19	.15	.23	.17½	.30	.25
Chromotropic, 300 lb bbls... lb.	1.00	1.06	1.06	1.00	1.06	1.00	1.06	1.00
Citric, USP, crystals, 230 lb bbls... lb.	.40	.43	.59	.40	.70	.46	.59	.44½
Cleve's, 250 lb bbls... lb.	.52	.54	.54	.52	.59	.52	.97	.95
Cresylic, 95%, dark dra NY... gal.	.54	.60	.70	.54	.54	.60	.70	.68
97-99%, pale dra NY... gal.	.58	.60	.77	.58	.77	.72	.72	.72
Formic, tech 90%, 140 lb cys... lb.	.10½	.12	.12	.10½	.12	.10½	.12	.11
Gallic, tech, bbls... lb.	.60	.70	.55	.50	.12	.50	.55	.50
USP, bbls... lb.	.74	.74	.74	.74	.55	.74	.74	.74
Gamma, 225 lb bbls wks... lb.	.77	.80	.80	.77	.80	.74	1.06	1.00
H, 225 lb bbls wks... lb.	.65	.70	.70	.65	.99	.80	.63	.57
Hydriodic, USP, 10% soln cys lb.	.67	.67	.67	.72	.67	.67	.67	.67
Hydrobromic, 48%, coml, 155 lb cys wks... lb.	.45	.48	.48	.45	.48	.45	.48	.45
Hydrochloric, CP, see Acid Muriatic.....								
Hydrocyanic, cylinders wks... lb.	.80	.90	.90	.80	.90	.80	.90	.80
Hydrofluoric, 30%, 400 lb bbls wks... lb.	.06	.06½	.06	.06	.06	.06	.06	.06
Hydrofluosilicic, 35%, 400 lb bbls wks... lb.	.11	.12	.12	.11	.11	.11	.11	.11
Hypophosphorous, 30%, USP, demijohns... lb.	.85	.85	.85	.85	.85	.85	.85	.85
Lactic, 22%, dark, 500 lb bbls lb.	.04	.04½	.05	.04	.05½	.04½	.06	.04½
44%, light, 500 lb bbls... lb.	.11½	.12	.12	.11	.12½	.11	.13½	.12
Laurent's, 250 lb bbls... lb.	.36	.42	.42	.36	.42	.40	.54	.52
Malic, powd., kegs... lb.	.45	.60	.60	.45	.60	.48	.60	.48
Metanilic, 250 lb bbls... lb.	.60	.65	.65	.60	.65	.60	.65	.60
Mixed Sulfuric-Nitric... tanks wks... N unit	.07	.07½	.07½	.07	.07½	.07	.08	.07½
tanks wks... S unit	.008	.01	.01	.008	.01	.008	.01½	.01
Monochloroacetic, tech bbl... lb.	.20	.30	.30	.18	.21	.18	.21	.18
Monosulfonic, bbls... lb.	1.65	1.70	1.70	1.65	1.70	1.65	.65	.65
Muriatic, 18 deg, 120 lb cys c-1 wks... 100 lb.	1.35	1.35	1.35	1.40	1.35	1.40	1.35	1.35
tanks, wks, 100 lb... lb.	1.00	1.00	1.00	1.00	1.00	1.00		
20 degrees, cys wks... 100 lb.	1.45		1.45		1.45	1.80	1.70	
N & W, 250 lb bbls... lb.	.85	.95	.85	.95	.85	.95	.85	.85
Naphthionic, tech, 250 lb... lb.	Nom.	Nom.		.59	.55	.59	.55	
Nitric, 36 deg, 135 lb cys c-1 wks... 100 lb.	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
40 deg, 135 lb cys, c-1 wks... 100 lb.	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Oxalic, 300 lb bbls wks NY... lb.	.11	.11½	.11½	.11	.11½	.11	.11½	.10½
Phosphoric 50%, U. S. P... lb.	.14	.14	.14	.14	.14	.08	.08½	.08
Syrupy, USP, 70 lb dra... lb.	.14		.14	.16	.14	.16		.16
Commercial, tanks... Unit.	.80	.80	.80					
Picramic, 300 lb bbls... lb.	.65	.70	.70	.65	.70	.65	.50	.50
Picric, kegs... lb.	.30	.50	.50	.30	.50	.30	.50	.40
Pyrogalllic, crystals... lb.	1.50	1.60	1.60	1.30	1.40	.86	.86	.86
Salicylic, tech, 125 lb bbl... lb.	.33	.37	.37	.33	.42	.33	.32	.27
Sulfanilic, 250 lb bbls... lb.	.15	.16	.16	.15	.16	.15	.16	.15
Sulfuric, 66 deg, 180 lb cys 1c-1 wks... 100 lb.	1.60	1.95	1.95	1.60	1.95	1.60	1.95	1.60
tanks, wks, ton	15.00	15.50	15.50	15.00	15.50	15.50		
1500 lb dr wks... 100 lb.	1.50	1.65	1.65	1.50	1.65	1.50	1.37½	1.20
60°, 1500 lb dr wks... 100 lb.	1.27½	1.42½	1.42½	1.27½	1.42½	1.27½	1.12½	1.12½
Oleum, 20%, 1500 lb. dra 1c-1 wks... ton		18.50	18.50	18.50	18.50	18.50	18.50	18.50

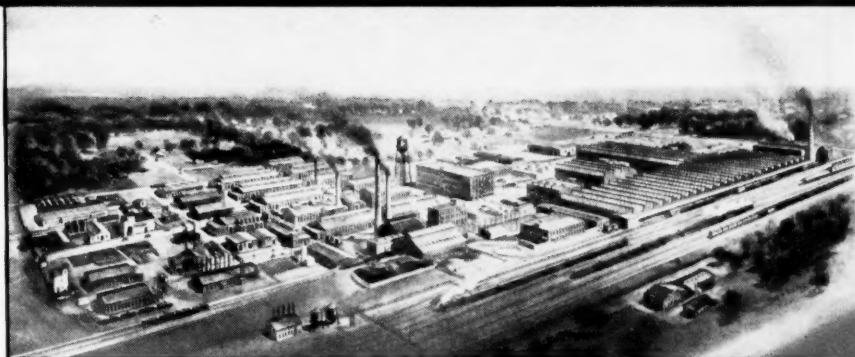


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Purchasing Power of the Dollar: 1926 Average—\$1 00 - 1930 Average \$1.161 - Jan. 1930 \$1.072 - Dec. 1930 \$1.255

Immediate shipments were light due to the holiday season.

Acid Oxalic — The undertone of the market continued in a very firm state with sales restricted to relatively small quantities. Consumption by the anthracite coal companies has not been as heavy as was anticipated, with the result that there is no severe shortage of material such as characterized the market a year ago.

Acid Sulfuric — With both the steel and fertilizer industries operating at greatly reduced schedules the demand for acid continued throughout the month to be considerably below normal. Bookings for 1931 contracts at unchanged prices continued to come in, however, in encouraging volume. Stocks of acid are said to be small and there is very little likelihood of any change in the price structure.

Alcohol — With the season for the consumption of denatured now approaching its peak, actual shipments were in much better volume than for some time past. The concessions made during the fall in an effort to stimulate sales have been stopped, and prices were firm throughout the month. Distillers have not as yet intimated their viewpoint on 1931 contract prices.

Alkalies — The past month witnessed one of the most serious competitive situations that has occurred in the alkali field for many years. Schedule prices were broken through with reckless abandon and for several days near the close of the month and year, it was extremely difficult to gauge correctly the price situation. Finally, on Dec. 31, two of the largest producers announced their temporary withdrawal from the market and on Jan. 2 they were followed by two additional manufacturers. This action on the part of a number of the leaders brought about a more stabilized condition. On Jan. 6, one of the large producers announced the following new schedule of prices on soda ash, caustic and chlorine, effective immediately. Light ash, paper bags, \$1.12½, jute bags \$1.15, barrels, \$1.38; dense ash, jute bags, \$1.17½, barrels, \$1.38; caustic 76%, solid, \$2.50, liquid, \$2.20, flake, \$2.90; chlorine, tanks, \$2.50, cylinders, \$3.50. The above prices are in each case f. o. b. manufacturers works and in carlot quantity. It was expected that other producers would fall in line with these prices and that the situation would stabilize itself at these figures which represent quite a concession from 1930 prices.

Aluminum Sulfate — The last two weeks of the month witnessed a falling off in shipments as consumers prepared to take inventory, but several large

	Current Market	1930		1929		1928	
		High	Low	High	Low	High	Low
40%, 1c-1 wks net.....ton	42.90	42.00	42.00	42.00	42.00	42.00	42.00
Tannic, tech, 300 lb bbls...lb.	.23	.40	.40	.23	.40	.30	.40
Tartaric, USP, crys, powd, 300 lb bbls.....lb.	.33	.35	.38½	.33	.38½	.38	.34½
Tobias, 250 lb bbls.....lb.	.....	.85	.85	.85	.85	.85	.85
Trichloroacetic bottles.....lb.	2.75	2.75	2.75	2.75	2.75	2.75	2.75
Kegs.....lb.	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Tungstic, bbls.....lb.	1.40	1.70	1.70	1.40	2.25	1.00	1.25
Albumen, blood, 225 lb bbls...lb.	.38	.40	.40	.38	.47	.38	.55
dark.....bbls...lb.	.12	.20	.20	.12	.20	.12	.....
Egg, edible.....lb.	.55	.56	.75	.55	.83	.70	.84
Technical, 200 lb cases...lb.	.50	.55	.73	.50	.80	.70	.80
Vegetable, edible.....lb.	.60	.65	.65	.60	.65	.60	.65
Technical.....lb.	.50	.55	.55	.50	.55	.50	.55
Alcohol							
Alcohol Butyl, Normal, 50 gal drs c-1 wks.....lb.	.17½	.18½	.18½	.17½	.17½	.17½	.18½
Drums, 1-c-1 wks.....lb.	.17½	.18½	.18½	.17½	.17½	.17½	.18½
Tank cars wks.....lb.	.16½	.17½	.17½	.16½	.17½	.16½	.17½
Amyl (from pentane) Tanks wks.....lb.	.....	.236	.236	.236	1.67	1.67	2.25
Diacetone, 50 gal drs del. gal.	1.42	1.60	1.60	1.42	1.80	1.22	1.80
Ethyl, USP, 190 pf, 50 gal bbls.....gal.	2.63	2.75	2.75	2.63	2.75	2.69½	3.70
Anhydrous, drums.....gal.	.56	.60	.71	.56	.71	.71	.65
Completely denatured, No. 1, 188 pf, 50 gal drs drums extra.....gal.	.40	.47	.51	.40	.52	.49	.52
No. 5, 188 pf, 50 gal drs drums extra.....gal.	.40	.44	.50	.40	.51	.48	.50
Tank, cars.....gal.	.37	.38	.48	.37	.50	.46	.46
Isopropyl, ref, gal drs.....gal.	.60	1.00	1.00	.60	1.30	1.00	1.25
Propyl Normal, 50 gal dr. gal.	.....	1.00	1.00	1.00	1.00	1.00	1.00
Alcotate, tanks.....60e a gal.	.....	.....	.....	.....	.....	.....	.....
Aldehyde Ammonia, 100 gal dr lb.	.80	.82	.82	.80	.82	.80	.82
Alpha-Naphthol, crude, 300 lb bbls.....lb.	.60	.65	.65	.60	.65	.65	.65
Alpha-Naphthylamine, 350 lb bbls.....lb.	.32	.34	.34	.32	.34	.32	.37
Alum Ammonia, lump, 400 lb bbls, 1c-1 wks.....lb.	3.20	3.50	3.50	3.20	3.50	3.25	3.30
Chrome, 500 lb casks, wks.....lb.	4.50	5.25	5.25	4.50	5.50	5.00	5.50
Potash, lump, 400 lb casks wks.....100 lb.	3.10	3.50	3.50	3.10	3.50	3.00	3.20
Soda, ground, 400 lb bbls wks.....100 lb.	3.50	3.75	3.75	3.50	3.75	3.75	3.75
Aluminum Metal, c-1 NY, 100 lb.	24.30	24.30	24.30	24.30	24.30	24.30	24.30
Chloride Anhydrous.....lb.	.05	.09	.15	.05	.20	.05	.40
Hydrate, 96%, light, 90 lb bbls.....lb.	.16	.17	.18	.16	.18	.17	.18
Stearate, 100 lb bbls.....lb.	.19	.22	.26	.19	.26	.25	.22
Sulfate, Iron, free, bags c-1 wks.....100 lb.	1.90	1.95	2.05	1.90	2.05	1.95	1.75
Coml, bags c-1 wks.....100 lb.	1.25	1.30	1.40	1.25	1.40	1.40	1.40
Aminobenzene, 110 lb kegs lb.	.....	1.15	1.15	1.15	1.15	1.15	1.15
Ammonium							
Ammonia anhydrous Com. tanks.....	.05½	.05½	.05½	.05½	.14½	.14	.13½
Ammonia, anhyd, 100 lb cyl. lb.	.15½	.15½	.15½	.15½	.03½	.03½	.03
Water, 26°, 800 lb dr del...lb.	.....	.03½	.03½	.03½	.03½	.03½	.03
Ammonia, aqua 26° tanks.....	.02½	.02½	.02½	.02½	.....	.....	.....
Acetate.....lb.	.28	.39	.39	.28	.....	.....	.....
Bicarbonate, bbls., f.o.b. plant 100 lb.....	5.15	5.15	5.15	6.50	5.15	.....	.....
Bifluoride, 300 lb bbls.....lb.	.21	.22	.22	.21	.22	.21	.22
Carbonate, tech, 500 lb cs. lb.	.09	.12	.12	.09	.12	.09	.08½
Chloride, white, 100 lb bbls wks.....100 lb.	4.45	5.15	5.15	4.45	5.15	4.45	5.15
Gray, 250 lb bbls wks.....lb.	5.25	5.75	5.75	5.25	5.75	5.25	5.75
Lump, 500 lb cks spot.....lb.	.11	.11½	.11½	.11	.11½	.11	.11½
Lactate, 500 lb bbls.....lb.	.15	.16	.16	.15	.16	.15	.16
Nitrate, tech, casks.....lb.	.06	.10	.10	.06	.10	.06	.10
Persulfate, 112 lb kegs.....lb.	.26	.30	.30	.26	.34	.26	.38
Phosphate, tech, powd, 325 lb bbls.....lb.	.11½	.12	.13	.11½	.13	.12½	.18
Sulfate, bulk c-1.....100 lb.	.....	1.75	2.10	1.75	2.40	2.05	2.90
Southern points.....100 lb.	.....	1.92½	2.10	1.82½	2.45	2.05	3.00
Nitrate, 26% nitrogen 31.6% ammonia imported bags c. i. f.....ton	45.00	45.10	57.60	45.00	60.85	52.40	60.85
Sulfoeyanide, kegs.....lb.	.36	.48	.48	.36	.48	.36	.60
Amyl Acetate, (from pentane) Tanks.....lb.	.....	.222	.236	.222	1.70	1.60	2.25
Tech., drs.....lb.	.225	.236	.24	.225	.24	.23	.....
Alcohol, sec Fusel Oil.....lb.	.....	5.00	5.00	5.00	.....	.....	.....
Furoate, 1 lb tins.....lb.	.15	.16	.16	.15	.16½	.15	.16½
Aniline Oil, 960 lb drs.....lb.	.34	.37	.37	.34	.37	.34	.48
Annatto, fine.....lb.	.50	.55	.90	.50	.90	.80	1.00
Anthraquinone, sublimed, 125 lb bbls.....lb.	.....	.....	.....	.....	.....	.....	.....
Antimony, metal elabs, ton lots.....lb.	.07	.05	.09½	.06½	.10	.08½	.12
Needle, powd, 100 lb cs.....lb.	.08½	.09	.09½	.08	.10	.09	.12
Chloride, soln (butter of) obys.....lb.	.13	.17	.17	.13	.18	.13	.18
Oxide, 500 lb bbls.....lb.	.08½	.08½	.08½	.07½	.10	.08½	.12
Salt, 66% tins.....lb.	.22	.24	.24	.22	.26	.24	.....
Sulfuret, golden, bbls.....lb.	.16	.20	.20	.16	.20	.16	.20
Vermilion, bbls.....lb.	.38	.42	.42	.38	.42	.38	.42
Archil, conc, 600 lb bbls.....lb.	.17	.19	.19	.17	.19	.17	.19
Double, 600 lb bbls.....lb.	.12	.14	.14	.12	.14	.12	.14
Triple, 600 lb bbls.....lb.	.12	.14	.14	.12	.16	.12	.16
Argols, 80% casks.....lb.18½	.18½	.18½	.18½	.18½	.16
Crude, 30%, casks.....lb.	.07½	.08	.08	.07½	.08	.08	.08

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average—\$1.00 - 1930 Average \$1.161 - Jan. 1930 \$1.072 - Dec. 1930 \$1.255

contracts were placed on the basis of the recent reduction.

Ammonia Anhydrous — On Jan. 1 the contract price was automatically advanced to the spot figure. Producers experienced little difficulty in booking contracts for 1931 on the 14c basis. Conditions have been well stabilized in this market for some time with production closely attuned to actual consumption.

Ammonia Aqua — Most of the tonnages for 1931 have been booked at unchanged prices from last year. As the month closed the price structure appeared to be much firmer. Shipments for 1930 compared very favorably with the preceding year. Manufacturers have announced the adoption of a new method of quoting aqua ammonia 26-degree in tank-cars. Quotations are now given at 5½¢ a pound of NH₃ f.o.b. point of production. This figures out below the 2c level. The new method is believed to be superior to the old manner of quoting and represents an effort to localize trade as well as to restore equilibrium in freight rates.

Ammonium Sulfate — Prices for domestic material were being nominally quoted at \$35 a ton but little tonnage changed hands during the month. The export market was likewise very dull with the schedule price of \$31 a ton being shaded on sizable quantities. Exports from the United States during the first ten months of 1930 totaled 71,247 long tons, as compared with 114,462 tons in 1929. The yield of ammonium sulfate in the United States depends largely upon steel production, consequently reduced output at steel mills decreases the quantity of sulfate available for export. Smaller overseas demand, however, was the principal reason for this year's smaller shipments. Imports in excess of 6,000 tons during October placed the ten months trade at 19,863 tons, as compared with 17,549 during the corresponding months of 1929, according to the Department of Commerce. The destination of exports and origin of imports follows:

	Exports		Imports	
	1929 year L. tons	10 mos. 1930 L. tons	1929 year L. tons	10 mos. 1930 L. tons
Belgium.....	.....	.....	8,326	.....
Germany.....	.....	.....	12,657	7,105
Netherlands.....	.....	.....	822	.....
U. Kingdom.....	.....	.....	875	.....
Canada.....	689	935	6,151	2,695
Cuba.....	9,773	6,559	.....	.....
Netherlands.....	.....	.....	.....	.....
East Indies.....	37,330	17,711	.....	.....
Philippines.....	30,376	10,219	.....	.....
Japan.....	60,025	25,263	.....	25
Other countries.....	6,568	10,560	2	15
Total.....	144,761	71,247	18,812	19,863

Aniline Oil — While producers were quite satisfied with the contracts booked

	Current Market	1930 High	1930 Low	1929 High	1929 Low	1928 High	1928 Low
Aroclors, wks.....lb.	.20	.40	.40	.20	.....	.....	.....
Arsenic, Red, 224 lb kegs, cs.....lb.	.09½	.10	.11	.08½	.11	.09	.11
White, 112 lb kegs.....lb.	.03½	.04½	.04½	.03½	.04½	.04	.04
Asbestine, c-1 wks.....ton	.....	15.00	15.00	15.00	15.00	4.75	14.75
Barium							
Barium Carbonate, 200 lb bags wks.....ton	58.00	60.00	60.00	58.00	60.00	57.00	57.00
Chlorate, 112 lb kegs NY.....lb.	.14	.15	.15	.14	.15	.14	.12½
Chloride, 600 lb bbl wks.....ton	63.00	69.00	69.00	63.00	69.00	63.00	65.00
Dioxide, 58%, 690 lb drs.....lb.	.12	.13	.13	.12	.13	.12	.13
Hydrate, 500 lb bbls.....lb.	.04½	.05½	.05½	.04½	.05½	.04½	.04½
Nitrate, 700 lb casks.....lb.	.07½	.08½	.08½	.07½	.08½	.08	.08
Barytes, Floated, 350 lb bbls wks.....ton	23.00	24.00	24.00	23.00	24.00	23.00	24.00
Bauxite, bulk, mines.....ton	5.00	8.00	8.00	5.00	8.00	5.00	8.00
Beeswax, Yellow, crude bags.....lb.	.24	.31	.34	.24	.37	.34	.36
Refined, cases.....lb.	.....	.37	.38	.37	.42	.39	.43
White, cases.....lb.	.34	.36	.53	.34	.53	.51	.58
Benzaldehyde, technical, 945 lb drums wks.....lb.	.60	.65	.65	.60	.65	.60	.70
Benzene							
Benzene, 90%, Industrial, 8000 gal tanks wks.....gal.	.21	.22	.21	.23	.23	.23	.21
Ind. Pure, tanks works.....gal.	.....	.21	.22	.21	.23	.23	.21
Benzidine Base, dry, 250 lb bbls.....lb.	.65	.67	.74	.65	.74	.70	.70
Benzoyl Chloride, 500 lb drs.....lb.	.45	.47	1.00	.45	1.00	1.00	1.00
Benzyl Chloride, tech drs.....lb.	.....	.25	.25	.25	.25	.25	.25
Beta-Naphthol, 250 lb bbl wks.....lb.	.22	.24	.24	.22	.26	.22	.26
Naphthylamine, sublimed, 200 lb bbls.....lb.	1.25	1.35	1.35	1.25	1.35	1.35	1.35
Tech, 200 lb bbls.....lb.	.58	.65	.65	.53	.68	.60	.65
Blanc Fixe, 400 lb bbls wks.....ton	75.00	90.00	90.00	75.00	90.00	75.00	90.00
Bleaching Powder							
Bleaching Powder, 300 lb drs c-1 wks contract.....100 lb.	2.00	2.35	2.35	2.00	2.25	2.00	2.25
Blood, Dried, fob, NY.....Unit	3.00	3.25	3.90	3.00	4.60	3.90	4.65
Chicago.....Unit	.....	2.75	4.50	2.75	5.00	4.40	5.35
S. American shipmt.....Unit	3.15	3.20	4.10	3.15	4.70	4.25	5.05
Blues, Bronze Chinese Milori Prussian Soluble.....lb.	.....	.35	.35	.35	.35	.32	.35
Bone, raw, Chicago.....ton	31.00	32.00	39.00	31.00	42.00	39.00	30.00
Bone, Ash, 100 lb kegs.....lb.	.06	.07	.07	.06	.07	.06	.07
Black, 200 lb bbls.....lb.	.05½	.08½	.08½	.05½	.08½	.08½	.08½
Meal, 3% & 50%, Imp.....ton	.....	31.00	31.00	31.00	35.00	30.00	37.00
Borax, bags.....lb.	.02½	.03½	.03½	.02½	.03½	.02½	.05
Bordeaux, Mixture, 16% pwd.....lb.	.12	.14	.14	.12	.14	.10½	.12
Paste, bbls.....lb.	.12	.14	.14	.12	.14	.10	.10
Brazilwood, sticks, shpmt.....lb.	26.00	28.00	28.00	26.00	28.00	26.00	28.00
Bromine, cases.....lb.	.38	.45	.47	.38	.....	.....	.....
Bronze, Aluminum, powd blk.....lb.	.60	1.20	1.20	.60	1.20	.60	1.20
Gold bulk.....lb.	.55	1.25	1.25	.55	1.25	.55	1.25
Butyl, Acetate, normal drs.....lb.	.17	.175	.20	.17	.195	.184	1.60
Tank, wks.....lb.	.16	.175	.186	.16	.186	.181	1.55
Aldehyde, 50 gal drs wks.....lb.	.34	.44	.44	.34	.70	.34	.70
Carbitol s ee Diethylene Glycol Mono (Butyl Ether).....	.....	.....	.....	.....	.....	.....	.....
Cellosolve (see Ethylene glycol mono butyl ether).....	.....	.....	.....	.....	.....	.....	.....
Furoate, tech., 50 gal. dr., lb.....	.....	.50	.50	.50	.50	.50	.....
Propionate, drs.....lb.	.22	.25	.27	.22	.36	.25	.36
Stearate, 50 gal drs.....lb.	.25	.30	.30	.25	.60	.25	.60
Tartrate, drs.....lb.	.55	.60	.60	.55	.60	.57	.60
Cadmium, Sulfide, boxes.....lb.	.90	1.40	1.75	.90	1.75	.75	2.00
Calcium							
Calcium, Acetate, 150 lb bags c-1.....100 lb.	.....	2.00	4.50	2.00	4.50	4.50	3.50
Arsenate, 100 lb bbls c-1 wks.....lb.	.07	.09	.09	.07	.09	.07	.09
Carbide, drs.....lb.	.05	.06	.06	.05	.06	.05	.06
Carbonate, tech, 100 lb bags c-1.....lb.	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Chloride, Flake, 375 lb drs c-1 wks.....ton	.....	22.75	22.75	22.75	25.00	22.75	27.00
Solid, 650 lb drs c-1 fob wks.....ton	20.00	20.00	20.00	20.00	20.00	20.00	23.00
Nitrate, 100 lb bags.....ton	40.00	43.00	43.00	40.00	52.00	42.00	52.00
Peroxide, 100 lb. drs.....lb.	.....	1.25	1.25	1.25	1.25	1.25	.....
Phosphate, tech, 450 lb bbls lb.	.08	.08½	.08½	.08	.08	.07	.08
Stearate, 100 lb bbls.....lb.	.19	.22	.26	.19	.26	.25	.....
Calurea, bags S. points, c.f. ton	.....	88.65	88.65	88.65	88.15	82.15	.....
Camwood, Bark, ground bbls.....lb.	.....	.18	.18	.18	.18	.18	.18
Candelilla Wax, bags.....lb.	.15	.17	.20	.15	.24	.22	.28
Carbitol (See Diethylene Glycol Mono Ethyl Ether).....	.....	.....	.....	.....	.....	.....	.....
Carbon, Decolorizing, 40 lb bags c-1.....lb.	.08	.15	.15	.08	.15	.08	.15
Black, 100-300 lb cases 1c-1 NY.....lb.	.06	.12	.12	.06	.12	.12	.12
Bisulfide, 500 lb drs 1c-1 NY.....lb.	.05½	.06	.06	.05½	.06	.05½	.06
Dioxide, Liq. 20-25 lb cyl.....lb.	.....	.06	.18	.06	.06	.06	.06
Tetrachloride, 1400 lb drs deliv red.....lb.	.06½	.07	.07	.06½	.07½	.06½	.07½
Caruba Wax, Flor, bags.....lb.	.28	.32	.37	.28	.43	.35	.58
No. 1 Yellow, bags.....lb.	.25	.27	.33	.25	.40	.33	.60
No. 2 N Country, bags.....lb.	.20	.23	.27	.20	.32	.28	.38
No. 2 Regular, bags.....lb.	.23	.27	.30	.23	.36	.31	.56
No. 3 N. C.....lb.	.16	.18	.23	.16	.25	.24	.32
No. 3 Chalky.....lb.	.16	.17	.23	.16	.26	.24	.32
Casein, Standard, Domestic.....ground.....lb.	.09½	.12	.15½	.09½	.17	.15	.18½

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Purchasing Power of the Dollar: 1926 Average—\$1.00 - 1930 Average \$1.161 - Jan. 1930 \$1.072 - Dec. 1930 \$1.255

ahead for the year, there was some disappointment that immediate shipments were not in better volume.

Antimony — In sympathy with the other metal markets, antimony was dull and lifeless. Consumers are evidently well stocked ahead, in most instances, and consequently, are little interested in the present spot market. Prices remained unaltered despite the light trading.

Arsenic — A fair increase in the number of inquiries from insecticide makers was in evidence during the last two weeks of the year, but few contracts were actually entered into. Prices were unchanged.

Bleaching Powder — Consumers were showing little desire to close contracts during the last two weeks of the month with the result that a large part of the contract tonnage was still open. While the situation is slightly competitive no change has been made in quotations.

Butyl Acetate — On Dec. 11 producers announced a revision of prices as follows: tankcars 16c a lb., tank wagons, 16.5c, five drums or over 17c, 1-4 drums 17.5c. Producers announced that they were accepting contracts through April 1, 1931 at these levels.

Calcium Arsenate — A few inquiries were in the market for 1931 contracts but generally speaking the market was quiet with prices for spot stocks unchanged.

Calcium Chloride — Sales and shipments were very satisfactory for this time of the year. Both the coal and refrigeration industries have entered the market in an encouraging way and producers are replenishing depleted stocks and building up large reserves in anticipation of a very good year in dust prevention and road work. Prices remain unaltered at \$20 and \$22.75 a ton.

Carbon Black — The stagnation in the market for this commodity continued throughout December, with buyers maintaining a very indifferent attitude either towards spot or contract prices. As a result, the price of 4c, f. o. b. Texas was really nominal. Little improvement is looked for several weeks as it is thought that consumers are carrying rather large surpluses into this year.

Carnauba Wax — The market continued unsettled with prices being shaded on any sizable quantities. Consumers, however, were withholding from any future commitments waiting for further indications as to the probable trend of the market.

Casein — With trading limited to small replacement lots of special grades, the market closed the year in a very dull way. Stocks in the hands of both producers

	Current Market	1930		1929		1928	
		High	Low	High	Low	High	Low
Cellosolve (see Ethylene glycol mono ethyl ether).....							
Acetate (see Ethylene glycol mono ethyl ether acetate).....							
Celluloid, Scraps, Ivory cs....lb.	.18	.20	.20	.30	.20	.30	.26
Shell, cases.....lb.	.15	.15	.15	.32	.15	.32	.30
Transparent, cases.....lb.	.80	1.25	1.25	.80	1.25	1.40	1.40
Cellulose, Acetate, 50 lb kegs....lb.	.03	.03	.03	.03	.03	.03	.03
Chalk, dropped, 175 lb bbls....lb.	.02	.03	.03	.02	.03	.02	.04
Precip, heavy, 560 lb cks....lb.	.02	.03	.03	.02	.03	.02	.04
Light, 250 lb casks.....lb.	.18	.19	.19	.18	.19	.18	.18
Charcoal, Hardwood, lump, bulk wks.....bu.	.06	.06	.06	.06	.06	.06	.06
Willow, powd, 100 lb bbl wks.....lb.	.04	.05	.05	.04	.05	.04	.05
Wood, powd, 100 lb bbls....lb.	.02	.03	.03	.02	.03	.02	.03
Chestnut, clarified bbls wks....lb.	.01	.02	.02	.01	.02	.01	.02
25% tks wks.....lb.	.05	.06	.06	.05	.06	.05	.06
Powd, 60%, 100 lb bgs wks....lb.	8.00	9.00	9.00	8.00	9.00	8.00	9.00
Powd, decolorized bgs wks....lb.	.01	.02	.02	.01	.02	.01	.02
China Clay, lump, blk mines ton	10.00	12.00	12.00	10.00	12.00	10.00	12.00
Powdered, bbls.....ton	15.00	25.00	25.00	15.00	25.00	15.00	25.00
Pulverized, bbls wks.....ton	.01	.03	.03	.01	.03	.01	.03
Imported, lump, bulk.....ton							
Powdered, bbls.....lb.							
Chlorine							
Chlorine, cys 1c-1 wks contract	.07	.08	.08	.07	.08	.07	.09
cys, cl wks, contract....lb.	.04	.04	.04	.04	.04	.04	.04
Liq tank or multi-car lot cys wks contract.....lb.	.01	.02	.025	.01	.03	.025	.03
Chlorobenzene, Mono, 100 lb. drs 1c-1 wks.....lb.	.10	.10	.10	.10	.10	.08	.07
Chloroform, tech, 1000 lb drs....lb.	.15	.16	.16	.15	.20	.16	.22
Chloropierin, comml cys....lb.	1.00	1.35	1.35	1.00	1.35	1.00	1.35
Chrome, Green, CP.....lb.	.26	.29	.29	.26	.29	.26	.29
Commercial.....lb.	.06	.11	.11	.06	.11	.06	.11
Yellow.....lb.	.16	.18	.18	.16	.18	.15	.17
Chromium, Acetate, 8% Chrome bbls.....lb.	.04	.05	.05	.04	.05	.04	.05
20° soln, 400 lb bbls....lb.	.27	.28	.28	.27	.28	.27	.28
Fluoride, powd, 400 lb bbl....lb.	.34	.35	.35	.34	.35	.34	.35
Oxide, green, bbls.....lb.	10.00	10.50	10.50	10.00	10.50	10.00	9.50
Coal tar, bbls.....bbl	2.10	2.22	2.22	2.10	2.22	2.10	2.22
Cobalt Oxide, black, bags....lb.	.52	.57	.57	.52	.57	.55	.57
Cochineal, gray or black bag....lb.	.53	.54	.54	.53	.54	.55	.56
Tenerife silver, bags.....lb.							
Copper							
Copper, metal, electrol....100 lb.	10.00	10.00	17.78	9.50	24.00	17.00	12.90
Carbonate, 400 lb bbls....lb.	.08	.16	.21	.08	.25	.13	.17
Chloride, 250 lb bbls....lb.	.22	.25	.28	.22	.28	.25	.28
Cyanide, 100 lb drs....lb.	.41	.42	.45	.41	.60	.44	.50
Oxide, red, 100 lb bbls....lb.	.15	.18	.32	.15	.32	.16	.17
Sub-acetate verdigris, 400 lb bbls.....lb.	.18	.19	.19	.18	.19	.18	.19
Sulfate, bbls c-1 wks....100 lb.	4.00	4.70	5.50	3.95	7.00	5.50	5.05
Copperas, crys and sugar bulk c-1 wks.....ton	13.00	14.00	14.00	13.00	14.00	13.00	14.00
Cotton, Soluble, wet, 100 lb bbls.....lb.	.40	.42	.42	.40	.42	.40	.42
Cottonseed, S. E. bulk c-1....ton							
Meal S. E. bulk.....ton							
7% Amm., bags mills....ton	37.50	38.00	38.00	37.50	38.00	37.50	38.00
Cream Tartar, USP, 300 lb. bbls.....lb.	.24	.25	.27	.24	.28	.26	.27
Creosote, USP, 42 lb cys....lb.	.40	.42	.42	.40	.42	.40	.42
Oil, Grade 1 tanks.....gal.	.15	.16	.16	.15	.19	.15	.19
Grade 2.....gal.	.13	.14	.14	.13	.23	.13	.23
Grade 3.....gal.	.13	.14	.14	.13	.28	.13	.28
Cresol, USP, drums.....lb.	.14	.17	.17	.14	.17	.14	.20
Crotonaldehyde, 50 gal dr....lb.	.32	.36	.36	.32	.36	.32	.36
Cudbear, English.....lb.	.16	.17	.17	.16	.17	.16	.17
Cutch, Rangoon, 100 lb bales....lb.	.11	.13	.13	.11	.16	.12	.18
Borneo, Solid, 100 lb bale....lb.	.06	.08	.08	.06	.08	.08	.07
Cyanamide, bulk c-1 wks							
Nitrogen unit.....		1.39	2.00	1.39	2.00	2.00	1.75
Dextrin, corn, 140 lb bags....100 lb.	4.42	4.72	4.82	4.42	4.92	4.62	5.12
White, 140 lb bags....100 lb.	4.17	4.67	4.77	4.17	4.87	4.57	5.07
Potato, Yellow, 220 lb bgs....lb.	.08	.09	.09	.08	.09	.08	.09
White, 220 lb bgs 1c-1....lb.	.08	.09	.09	.08	.09	.08	.09
Tapioca, 200 lb bags 1c-1....lb.	.08	.08	.08	.08	.08	.08	.08
Diamylphthalate, drs wks....gal.	3.80	3.80	3.80	3.80	3.80	3.80	3.80
Dianisidine, barrels.....lb.	2.35	2.70	2.70	2.35	3.10	2.70	2.90
Dibutylphthalate, wks....lb.	.24	.28	.28	.24	.28	.28	.28
Dibutyltartrate, 50 gal drs....lb.	.29	.31	.31	.29	.31	.29	.31
Dichloroethylene, 50 gal drs....lb.	.55	.65	.65	.55	.65	.55	.65
Dichloromethane, drs wks....lb.	2.75	3.00	3.00	2.75	3.00	2.75	2.5
Diethylamine, 400 lb drs....lb.	1.85	1.90	1.90	1.85	1.90	1.85	2.15
Diethylcarbonate, drs....gal.	.55	.60	.60	.55	.60	.55	2.00
Diethylaniline, 850 lb drs....lb.	.14	.16	.13	.10	.13	.10	.60
Diethyleneglycol, drs....lb.	.16	.16	.13	.10	.13	.10	.15
Mono ethyl ether, drs....lb.	.24	.30	.30	.24	.30	.25	.35
Diethylene oxide, 50 gal dr....lb.	.64	.67	.67	.64	.67	.64	.67
Diethylorthotoluidin, drs....lb.							
Diethyl phthalate, 1000 lb drums.....lb.	.24	.26	.26	.24	.26	.24	.26
Diethylsulfate, technical, 50 gal drums.....lb.	.30	.35	.35	.30	.35	.30	.35
Dimethylamine, 400 lb drs....lb.	2.62	2.62	2.62	2.62	2.62	2.62	2.62
Dimethylaniline, 340 lb drs....lb.	.26	.28	.28	.26	.32	.26	.32

"Be it resolved..."

AT THE first meeting of the Board of Directors in this year of 1931, it was moved and carried that we, as an organization for profit, make the most of the opportunities offered us from now on."

Here's a swell resolution to start off the year—and here's a swell opportunity to match it. We offer you the benefits of our years of experience, our expert chemists, and our modern industrial laboratory for use in developing modern, cost-cutting, quality-building formulae for you—without charge. Here's a chance to check up—before competition forces you to check out.

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Purchasing Power of the Dollar: 1926 Average—\$1.00 - 1930 Average \$1.161 - Jan. 1930 \$1.072 - Dec. 1930 \$1.255

and consumers were unusually heavy, and until these are worked off there is little likelihood of a resumption of trading in any appreciable volume.

Citrates — According to a cable from Messina, the Camera Agrumaria placed the price of citrate of lime for the 1930-1931 season at 400 lire per quintal of 64 per cent citric acid content. To meet this decrease, domestic producers on Dec. 15, announced a further reduction of 2c on both the potassium and sodium salts.

Copper — The metal continued to fluctuate during the past month. On Dec. 1 smelters advanced the price $\frac{1}{4}$ c, to 11 $\frac{1}{4}$ c, on Dec. 3 they again raised the price $\frac{1}{4}$ c on Dec. 17, the market weakened, with the domestic quotation at 10c and the export price at 10.8c. On Dec. 24 the price was again raised $\frac{1}{4}$ c and on the 29th an additional $\frac{1}{4}$ c was added. Sales were in better volume during the month and the prevailing opinion appears to be that the copper market will stabilize itself for sometime in the 10-10 $\frac{1}{2}$ c range. Imports of copper in unmanufactured form into the United States amounted to 22,844 metric tons in November against 30,459 tons in October and 23,713 tons in September according to American Bureau of Metal Statistics. Great Britain imported 10,877 tons in November against 16,399 tons in October and 13,757 tons in September. Exports of refined copper from the United States totaled 31,478 tons in November against 26,251 tons in October and 24,218 tons in September.

Copper Sulfate — On Dec. 19 leading producers reduced the carlot price from \$4.25 a cwt., to \$4.00 due to the drop in the metal market below the 11c figure on which the \$4.25 price was based. Sales during the past month were comparatively small, but manufacturers were busy accumulating stocks in preparation for the agricultural season. Despite the reduced tonnages in most lines, sales of copper sulfate for 1930 were very close to, if not equal to the average of the past seven years. This was due mainly to increased sales on the Pacific Coast where formerly domestic producers sold at a disadvantage, and to increased tonnages in South America.

Copperas — With steel mill operation reduced to 37% of capacity, the production of copperas has been lowered very considerably and only an appreciable lessening in the demand prevented an increase in price.

Dextrin — In an effort to stimulate sales rather substantial reductions were announced during the third week of the

	Current Market		1930		1929		1928	
			High	Low	High	Low	High	Low
Dimethylsulfate, 100 lb dra...lb.	.45	.50	.50	.45	.50	.45	.50	.45
Dinitrobenzene, 400 lb bbls...lb.	.15 $\frac{1}{2}$	.16 $\frac{1}{2}$	.16 $\frac{1}{2}$	.15 $\frac{1}{2}$	.16 $\frac{1}{2}$	.15	.16 $\frac{1}{2}$	.15 $\frac{1}{2}$
Dinitrochlorobenzene, 400 lb bbls...lb.	.13	.15	.15	.13	.15	.1	.16	.15
Dinitronaphthalene, 350 lb bbls...lb.	.34	.37	.37	.34	.37	.34	.34	.32
Dinitrophenol, 350 lb bbls...lb.	.31	.32	.32	.31	.32	.31	.32	.31
Dinitrotoluene, 300 lb bbls...lb.	.16	.17	.18	.16	.19	.17	.19	.18
Diorthotolylguanidine, 275 lb bbls wks...lb.	.42	.46	.46	.42	.49	.42	.90	.48
Dioxan (See Diethylene Oxide)	.....	.....	.....	.....	.....	.....	.....	.....
Diphenyl...lb.	.20	.40	.50	.20	.50	.40	.....	.....
Diphenylamine...lb.	.38	.40	.40	.38	.47	.40	.47	.45
Diphenylguanidine, 100 lb bbl lb.	.30	.35	.35	.30	.40	.30	.72	.40
Dip Oil, 25%, drums...lb.	.26	.30	.30	.26	.30	.26	.30	.26
Divi Divi pods, bgs shipmt. ton	.....	35.00	46.50	35.00	57.00	46.50	62.00	58.00
Extract...lb.	.05	.05 $\frac{1}{2}$	.05 $\frac{1}{2}$	.05	.05 $\frac{1}{2}$	.05	.05 $\frac{1}{2}$	.05
Egg Yolk, 200 lb cases...lb.	.72	.75	.80	.72	.84	.77	.82	.73
Epsom Salt, tech, 300 lb bbls c-1 NY...lb.	1.70	1.90	1.90	1.70	1.90	1.70	1.75	1.7
Ether, USP, 600 lb drs...lb.	.21	.28	.28	.21	.39	.38	.38	.37
Anhydrous, C.P. 300 lb drs...lb.	.....	.40	.40	.....	.....	.....	.....	.....
Ethyl Acetate, 85% Ester, tanks...lb.	.....	.088	.115	.085	.122	.108	1.05	.75
drums...lb.	.094	.10	.158	.094	.129	.111	1.25	1.10
Anhydrous, tanks...lb.	.....	.119	.142	.119	.....	.....	.....	.....
drums...lb.	.115	.121	.156	.115	.....	.....	.....	.....
Acetoneacetate, 50 gal drs...lb.	.65	.68	.68	.65	.68	.65	.....	.....
Benzylamine, 300 lb drs...lb.	.88	.90	1.11	.88	1.11	1.05	1.11	1.05
Bromide, tech, drums...lb.	.50	.55	.55	.50	.55	.50	.70	.70
Carbonate, 90%, 50 gal drs gal.	1.85	1.90	1.90	1.85	1.90	1.85	.....	.....
Chloride, 200 lb drums...lb.	.....	.22	.22	.22	.22	.22	.22	.22
Chlorocarbonate, cbys...lb.	.....	.30	.40	.30	.40	.35	.....	.....
Ether, Absolute, 50 gal drs...lb.	.50	.52	.52	.50	.52	.50	.....	.....
Furoate, 1 lb tins...lb.	.....	5.00	5.00	5.00	5.00	5.00	.....	.....
Lactate, drums works...lb.	.25	.29	.29	.25	.35	.25	3.50	3.50
Methyl Ketone, 50 gal drs...lb.	.....	.30	.30	.30	.30	.30	.30	.30
Oxalate, drums works...lb.	.45	.55	.55	.45	.55	.45	.55	.45
Oxybutyrate, 50 gal drs wks...lb.	.....	.30 $\frac{1}{2}$	.30 $\frac{1}{2}$	.30 $\frac{1}{2}$	.36	.30	.36	.30
Ethylene Dibromide, 60 lb dr lb.	.....	.70	.70	.70	.70	.79	.70	.70
Chlorhydrin, 40%, 10 gal cbys. chloro. cont...lb.	.75	.85	.85	.75	.85	.75	.85	.75
Dichloride, 50 gal drums...lb.	.05	.07	.07	.05	.10	.05	.11	.07
Glycol, 50 gal drs wks...lb.	.25	.28	.28	.25	.30	.25	.40	.25
Mono Butyl Ether drs wks...lb.	.25	.27	.27	.23	.31	.23	.27	.31
Mono Ethyl Ether drs wks...lb.	.17	.20	.20	.16	.24	.16	.20	.24
Mono Ethyl Ether Acetate dr. wks...lb.	.19 $\frac{1}{2}$	.23	.23	.19	.26	.19	.23	.26
Mono Methyl Ether, drs lb.	.21	.23	.23	.19	.23	.19	.....	.....
Oxide, cyl...lb.	.....	2.00	2.00	2.00	.....	.....	.....	.....
Ethylidenaniline...lb.	.45	.47 $\frac{1}{2}$	.47 $\frac{1}{2}$	.45	.65	.45	.65	.62
Feldspar, bulk...ton	15.00	20.00	25.00	15.00	25.00	20.00	25.00	20.00
Powdered, bulk works...ton	15.00	21.00	21.00	15.00	21.00	15.00	21.00	15.00
Ferrie Chloride, tech, crystal 475 lb bbls...lb.	.05	.07 $\frac{1}{2}$	.07 $\frac{1}{2}$	.05	.09	.05	.09	.07 $\frac{1}{2}$
Fish Scrap, dried, wks...unit	.....	4.20&10	4.35&10	3.90&10	4.25&10	3.65&10	5.50&10	4.90&10
Acid, Bulk 7 & 3 $\frac{1}{2}$ % delivered Norfolk & Balt. basis...unit	.....	3.50&50	3.50&50	3.20&50	4.00&50	3.50&50	4.75&50	4.00&50
Fluorspar, 98%, bags...unit	41.00	46.00	46.00	41.00	46.00	41.00	25.00	25.00

Formaldehyde

Formaldehyde, aniline, 100 lb drums...lb.	.....	.42	.....	.37 $\frac{1}{2}$	.....	.37 $\frac{1}{2}$	.42	.39
USP, 400 lb bbls wks...lb.	.06	.07 $\frac{1}{2}$	.08	.06	.10	.08 $\frac{1}{2}$	.09	.08 $\frac{1}{2}$
Fossil Flour...lb.	.02 $\frac{1}{2}$	.04	.04	.02 $\frac{1}{2}$	.04	.02 $\frac{1}{2}$	.04	.02 $\frac{1}{2}$
Fullers Earth, bulk, mines...ton	15.00	20.00	20.00	15.00	20.00	15.00	20.00	15.00
Imp. powd ~1 bags...ton	24.00	30.00	30.00	24.00	30.00	25.00	30.00	25.00
Furfural (tech.) drums, wks...lb.	.....	.10	.15	.10	.19 $\frac{1}{2}$	.17	.19 $\frac{1}{2}$	.17 $\frac{1}{2}$
Furfuralamide (tech) 100 lb dr lb.	.....	.30	.30	.30	.30	.30	.....	.....
Furfuryl Acetate, 1 lb tins...lb.	.....	5.00	5.00	5.00	5.00	5.00	.....	.....
Alcohol, (tech) 100 lb dr lb.	.....	.50	.50	.50	.50	.50	.....	.....
Furoic Acid (tech) 100 lb dr lb.	.....	.50	.50	.50	1.00	.50	.....	.....
Fusel Oil, 10% impurities...gal.	.....	1.35	1.35	1.35	1.35	1.35	1.35	1.3
Fustic, chips...lb.	.04	.05	.05	.04	.05	.04	.05	.04
Crystals, 100 lb boxes...lb.	.20	.22	.22	.20	.22	.20	.22	.20
Liquid, 50*, 600 lb bbls...lb.	.09	.10	.10	.09	.10	.09	.10	.09
Solid, 50 lb boxes...lb.	.14	.16	.16	.14	.16	.14	.23	.20
Sticks...ton	25.00	26.00	26.00	25.00	26.00	25.00	32.00	30.00
G Salt paste, 360 lb bbls...lb.	.45	.50	.50	.45	.52	.45	.52	.50
Gall Extract...lb.	.18	.20	.20	.18	.21	.18	.21	.20
Gambier, common 200 lb cs...lb.	.06 $\frac{1}{2}$	.07	.07	.06	.07	.06	.09	.08
25% liquid, 450 lb bbls...lb.	.08	.10	.10	.08	.14	.08	.14	.12
Singapore cubes, 150 lb bg...lb.	.09 $\frac{1}{2}$	.09	.09	.08 $\frac{1}{2}$	.09	.08 $\frac{1}{2}$	.12	.11
Gelatin, tech, 100 lb cases...lb.	.45	.50	.50	.45	.50	.45	.50	.45
Glauber's Salt, tech, c-1 wks...100 lb.	1.00	1.70	1.70	1.00	1.70	.70	1.00	.70
Glucose (grape sugar) dry 70-80* bags c-1 NY...100 lb.	3.24	3.34	3.34	3.24	3.34	3.20	3.34	3.24
Tanner's Special, 100 lb bags...100 lb.	.....	3.14	3.14	3.14	3.14	3.14	3.14	3.14
Glue, medium white, bbls...lb.	.22	.24	.24	.20	.24	.20	.24	.20
Pure white, bbls...lb.	.25	.26	.26	.22	.26	.22	.26	.22
Glycerin, CP, 550 lb drs...lb.	.12 $\frac{1}{2}$	.14 $\frac{1}{2}$	.14 $\frac{1}{2}$	.12 $\frac{1}{2}$	.16	.13 $\frac{1}{2}$	.19	.15
Dynamite, 100 lb drs...lb.	.11	.12 $\frac{1}{2}$	.12 $\frac{1}{2}$	.11	.12 $\frac{1}{2}$	.10 $\frac{1}{2}$	.15	.11 $\frac{1}{2}$
Saponification, tanks...lb.	.09	.08	.08	.07 $\frac{1}{2}$	.08 $\frac{1}{2}$	.07 $\frac{1}{2}$	.10 $\frac{1}{2}$	.08 $\frac{1}{2}$
Soap Lye, tanks...lb.	.06 $\frac{1}{2}$	.07 $\frac{1}{2}$	.07 $\frac{1}{2}$	.06 $\frac{1}{2}$	.07 $\frac{1}{2}$	.06 $\frac{1}{2}$	.09 $\frac{1}{2}$	.07 $\frac{1}{2}$
Graphite, crude, 220 lb bgs...ton	15.00	35.00	35.00	15.00	35.00	15.00	35.00	15.00
Flake, 500 lb bbls...lb.	.06	.09	.09	.06	.09	.06	.09	.06

Gums

Gum Accroides, Red, coarse and fine 140-150 lb bags...lb.	.03 $\frac{1}{2}$.04 $\frac{1}{2}$.04 $\frac{1}{2}$.03 $\frac{1}{2}$.04 $\frac{1}{2}$.03	.04 $\frac{1}{2}$.03 $\frac{1}{2}$
Powd, 150 lb bags...lb.	.06	.06 $\frac{1}{2}$.06 $\frac{1}{2}$.06	.06 $\frac{1}{2}$.06 $\frac{1}{2}$.06 $\frac{1}{2}$.06

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month, but larger consumers were out of the market awaiting further developments in the corn market.

Ethyl Acetate — On Dec. 5, a further reduction in the schedule was announced, tankcars being based on 8.5c a lb., drums carlots, 9.1c and L.C.I. shipments 9.7c. On Dec. 11, an increase was placed in effect, the first in several months, and as the month and year closed the established quotations were as follows: tanks 8.8c, tank wagons, 9.3c, five drums or over 9.8c and 1-4 drums, 10.3c. Producers were accepting contracts at these prices through April 1, 1931. Shipments were merely routine, but a decided improvement is looked for shortly as the automotive companies swing into larger production schedules.

Fish Scrap — Producers on the Chesapeake Bay section are completely sold out and resale lots that are for sale are bringing a premium.

Formaldehyde — The market appeared to have stabilized itself at the price announced late in November and producers were principally occupied with contract renewals. Material for immediate shipment was in fair demand.

Glauber's Salt — Some shading on contracts was in evidence on the anhydrous but no change in open quotations was made. Crystal prices were unchanged with shipments of a very routine nature pending the taking of inventory and a renewal of activity in the textile centers.

Glues — Firm prices continued to rule in the market for animal glues in the face of light demand from consuming channels. Little in the way of betterment was looked for some weeks as stocks in the hands of consumers are rather heavy for this time of the year.

Glycerine — As a result of keen competitive conditions, due to surplus production, a decline of ½c was officially made in quotations of the C. P. grade. Crude material remained quiet and unchanged.

Hydrogen Peroxide — Shipments were small in most instances as consumers, generally speaking, were well stocked ahead for the winter months. Prices are firm and unaltered.

Kauri Gum — The gum market generally maintained a very quiet appearance pending the opening of the new year. Such sales as were made were in small quantities and for prompt shipment for replacement. Prices on Kauri were steady. A report of the Department of Commerce just released shows that com-

	Current Market	High	Low	High	Low	High	Low
Yellow, 150-200 lb bags...lb.	.18	.20	.20	.18	.20	.18	.18
Animi (Zanzibar) bean & pea							
250 lb cases...lb.	.35	.40	.40	.35	.40	.35	.35
Glassy, 250 lb cases...lb.	.50	.55	.55	.50	.55	.50	.50
Asphaltum, Barbadoes (Manjak)							
200 lb bags...lb.	.09	.12	.12	.09	.12	.09	.09
Egyptian, 200 lb cases...lb.	.15	.17	.17	.15	.17	.15	.15
Gilsonite Selects, 200 lb bags							
ton	58.00	65.00	65.00	58.00	65.00	58.00	55.00
Damar Batavia standard 136, lb							
cases...lb.	.14	.14½	.20	.14	.26	.22	.22½
Batavia Dust, 160 lb bags...lb.	.06½	.07	.11	.06	.11	.10½	.11
E Seeds, 136 lb cases...lb.	.08½	.09	.13	.08	.17½	.15	.17½
F Splinters, 136 lb cases and							
bags...lb.	.07½	.08	.13½	.07	.13½	.13	.14½
Singapore, No 1, 224 lb cases lb.	.18½	.18½	.24	.18½	.30½	.26	.30½
No. 2, 224 lb cases...lb.	.13½	.14	.20½	.13	.24	.21½	.24
No. 3, 180 lb bags...lb.	.07½	.08	.11½	.07	.14	.11	.15
Benzoin Sumatra, U. S. P. 120 lb							
cases...lb.	.33	.34	.40	.33	.40	.38	.48
Copal Congo, 112 lb bags, clean							
opaque...lb.	.16	.17	.17	.16	.17	.14	.15
Dark, amber...lb.	.07½	.08	.08	.07½	.09	.08½	.09
Light, amber...lb.	.12½	.14	.14	.12½	.14	.12½	.14
Water white...lb.	.37	.45	.45	.37	.36	.35	.36
Mastic...lb.	.57	.58	.65	.57	.65	.58	.65
Manila, 180-190 lb baskets							
Loba A...lb.	.14	.15	.17½	.13	.17½	.17	.17½
Loba B...lb.	.13½	.14	.16½	.13½	.16½	.15½	.16½
Loba C...lb.	.10	.14	.14	.10	.14½	.13½	.14
Pale bold, 224 lb cases...lb.	.16	.18	.19	.16	.19	.17	.19
Pale nubs...lb.	.12	.12½	.13½	.12	.13½	.13	.13½
East Indies chips, 180 lb bags lb.	.09	.10	.11	.09	.11	.10	.11
Pale bold, 180 lb bags...lb.	.17½	.18	.21	.17½	.21	.20	.21
Pale nubs...lb.	.12½	.14	.16	.12½	.16	.15	.16
Pontianak, 224 lb cases...lb.	.19	.20	.21	.19	.23	.20	.25½
Pale bold gen No 1...lb.	.13½	.14	.15	.13½	.15	.14½	.15
Pale gen chips spot...lb.	.12½	.13	.14	.12½	.14	.13½	.14
Elemi, No. 1, 80-85 lb cs...lb.	.12	.12½	.13½	.12	.13½	.13	.13½
No. 2, 80-85 lb cases...lb.	.11	.12	.13	.11	.13	.12	.13
No. 3, 80-85 lb cases...lb.	.48	.54	.57	.48	.57	.50	.57
Kauri, 224-226 lb cases No. 1							
cases...lb.	.32	.33	.38	.32	.38	.35	.38
No. 2 fair pale...lb.	.10	.12	.12	.10	.12	.10	.12
Brown Chips, 224-226 lb							
cases...lb.	.38	.40	.40	.38	.40	.38	.40
Bush Chips, 224-226 lb							
cases...lb.	.24½	.26	.26	.24½	.26	.24½	.26
Pale Chips, 224-226 lb cases							
...lb.	.27	.28	.40	.27	.72	.35	.60
Sandarac, prime quality, 200							
lb bags & 300 lb casks...lb.	.25	.25	.25	.25	.20	.17	.20
Helium, 1 lit. bot...lit.	.14	.15	.15	.14	.20	.14	.20
Hematine crystals, 400 lb bbls lb.	.11	.11	.11	.11	.11	.11	.11
Paste, 500 bbls...lb.	.03	.03½	.03½	.03	.03½	.03	.03½
Hemlock 25%, 600 lb bbls wks lb.	.16.00	16.00	16.00	17.00	17.00	16.00	16.00
Bark...ton	.60	.60	.60	.60	.60	.60	.60
Hexalene, 50 gal dra wks...lb.	.46	.50	.50	.46	.58	.48	.56
Hexamethylenetetramine, dra lb.							
Hoof Meal, fob Chicago...unit	2.50	3.75	2.50	4.00	3.75	4.00	4.00
South Amer. to arrive...unit	2.70	3.75	2.70	3.90	3.75		
Hydrogen Peroxide, 100 vol, 140							
lb clys...lb.	.21	.24	.26	.21	.26	.24	.26
Hydroxamine Hydrochloride lb.		3.15	3.15	3.15			
Hypernic, 51%, 600 lb bbls...lb.	.12	.15	.15	.12	.15	.12	.15
Indigo Madras, bbls...lb.	1.28	1.30	1.30	1.28	1.30	1.28	1.28
20% paste, drums...lb.	.15	.18	.18	.15	.18	.15	.18
Synthetic, liquid...lb.		.12	.12	.12	.12	.12	.15
Iron Chloride, see Ferric or							
Ferrous							
Iron Nitrate, kegs...lb.	.09	.10	.10	.09	.10	.09	.10
Coml, bbls...100 lb.	2.50	3.25	3.25	2.50	3.25	2.50	3.25
Oxide, English...lb.	.10	.12	.12	.10	.12	.10	.12
Red, Spanish...lb.	.02½	.03½	.03½	.02½	.03½	.02½	.03½
Isopropyl Acetate, 50 gal dra gal.	.85	.90	.90	.85	.90	.85	.90
Japan Wax, 224 lb cases...lb.	.11½	.12	.15½	.11½	.18	.16	.20
Kieselguhr, 95 lb bgs NY...							
Brown...ton	60.00	70.00	70.00	60.00	70.00	60.00	70.00
Lead Acetate, bbls wks...100 lb.	10.50	11.00	13.50	10.50	13.50	13.00	
White crystals, 500 lb bbls							
wks...100 lb.	12.00	12.25	14.50	11.50	14.50	14.00	13.50
Arsenate, dra 1c-1 wks...lb.	.13	.16	.16	.13	.15	.13	.15
Dithiofuroate, 100 lb dr...lb.		1.00	1.00	1.00			
Metal, c-1 NY...100 lb.		5.10	7.75	5.10	7.75	6.10	6.25
Nitrate, 500 lb bbls wks...lb.	.13	.14	.14	.13	.14	.14	.14
Oleate, bbls...lb.	.17½	.18	.18	.17½	.18	.17½	.18
Oxide Litharge, 500 lb bbls lb.		.08½	.08½	.08½	.08½	.08½	.08½
Red, 500 lb bbls wks...lb.	.08½	.09½	.09½	.08½	.09½	.09½	.09½
White, 500 lb bbls wks...lb.	.07½	.08	.09½	.07½	.09½	.09	.09
Sulfate, 500 lb bbls wk...lb.	.06½	.07	.08½	.06½	.08½	.08½	.08½
Leuna saltpetre, bags c.i.f. ton		57.60	57.60	57.60	57.00	52.00	
S. points c.i.f. ton		57.90	57.90	57.90	57.30	52.30	
Lime, ground stone bags...ton		4.50	4.50	4.50	4.50	4.50	4.50
Live, 325 lb bbls wks...100 lb.		1.05	1.05	1.05	1.05	1.05	1.05
Lime Salts, see Calcium Salts							
Lime-Sulfur soln bbls...gal.	.15	.17	.17	.15	.17	.15	.17
Lithopone, 400 lb bbls 1c-1 wks							
...lb.	.04½	.05	.05½	.04½	.06½	.05½	.06½
Logwood, 51%, 600 lb bbls...lb.	.07	.08	.08½	.07	.08½	.08½	.08½
Chips, 150 lb bags...lb.	.03	.03½	.03½	.03	.03½	.03	.03½
Solid, 50 lb boxes...lb.	.12	.12½	.12½	.12	.12½	.12½	.12½
Sticks...ton	24.00	26.00	26.00	24.00	26.00	24.00	26.00
Lower grades...lb.	.07½	.08	.08	.07½	.08	.07½	.08
Madder, Dutch...lb.	.22	.25	.25	.22	.25	.22	.30
Magnesite, calc, 500 lb bbl...ton	50.00	60.00	60.00	50.00	60.00	50.00	48.00

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parative statistics of production and exports indicate that stocks of kauri gum on hand in New Zealand at the end of the year 1929-30 were low, being valued at only £5,151 as against £23,275 the previous year. Production and export figures were:

Year	Production	Exports
1928-29	3,812	4,566
1929-30	4,628	4,941

Lead Acetate — What sales were actually made were at published quotations but the demand from consuming channels was small.

Lithopone — Producers were busy during the month in negotiating 1931 contracts and as the year closed a very satisfactory amount of business was reported placed at the 4½¢ a lb. basis.

Naphtha Solvent — Trading was quiet at unchanged price levels.

Naphthalene — Trading was in small lots throughout the month. 1931 contracts were closed in satisfactory volume at prices in line with the reduction placed in effect several weeks ago. A few large consumers were still disinclined to commitments but they were expected to be covered shortly.

Nickel Salts — On Dec. 24 leading manufacturers of both the single and double salts announced a reduction of 2¢ a lb., both products now being based on a 10½¢ price. For several months the plating industry has been operating at very restricted schedules with the result that stocks of nearly all plating chemicals are larger than normal. In an effort to stimulate sales producers determined on a 2¢ decrease.

Phenol — Dye manufacturers were more active than they have been for some time. In addition, some improvement was in evidence in the volume moving into the plastic and pharmaceutical lines. Contracts for the present year are practically 100% concluded according to reports from leading producers.

Potassium Bichromate — Producers have closed practically all of the usual contract tonnages at unchanged prices. The leather industry has failed to make the gains expected with the passage of the tariff of last year, and consequently, the shipments to tanneries have been smaller than was anticipated in some quarters.

Potash Caustic — Both producers and importers report large tonnages booked for 1931 at prices unaltered from last year's figures. The soap industry has entered the market in a rather large way for future commitments. Sales during the last two weeks of the month were small pending the stock-taking period.

	Current Market	1930 High	1930 Low	1929 High	1929 Low	1928 High	1928 Low
Magnesium							
Magnesium Carb, tech, 70 lb bags NY	.06	.06½	.06½	.06	.06½	.06	.06½
Chloride flake, 375 lb. drs o-l wks.	36.00	36.00	36.00	36.00	36.00	37.00	27.00
Imported shipment, ton	31.75	33.00	33.00	31.75	33.00	33.00	33.00
Fused, imp, 900 lb bbls NY ton	31.00	31.00	31.00	31.00	31.00	31.00	31.00
Fluosilicate, crys, 400 lb bbls wks.	.10	.10½	.10½	.10	.10½	.10	.10½
Oxide, USP, light, 100 lb bbls lb.	.42	.42	.42	.42	.42	.42	.42
Heavy, 250 lb bbls lb.	.50	.50	.50	.50	.50	.50	.50
Peroxide, 100 lb cs. lb.	1.00	1.25	1.25	1.00	1.25	1.00	1.25
Silicofluoride, bbls lb.	.09½	.10½	.10½	.09½	.10½	.09½	.10½
Stearate, bbls lb.	.25	.26	.26	.25	.26	.25	.26
Manganese Borate, 30%, 200 lb bbls lb.	.19	.19	.19	.24	.19	.24	.24
Chloride, 600 lb casks lb.	.07½	.08½	.08½	.07½	.08½	.08	.08½
Dioxide, tech (peroxide) drs lb.	.03½	.06	.06	.03½	.06	.04½	.06
Ore, Powdered or granular lb.	.02½	.03	.03	.02½	.03	.02½	.03
75-80% bbls lb.	.03½	.03½	.03½	.03½	.03½	.03½	.03½
80-85% bbls lb.	.04	.04½	.04½	.04	.04½	.04	.04½
85-88% bbls lb.	.07	.08	.08	.07	.08	.07	.08
Sulfate, 550 lb drs NY lb.	.03½	Nom.	Nom.	.03½	Nom.	.03½	Nom.
Mangrove 55%, 400 lb bbls lb.	29.75	33.00	29.75	35.00	30.00	45.00	39.00
Bark, African, ton	14.00	15.00	14.00	15.00	14.00	12.00	10.00
Marble Flour, bulk, ton	2.05	2.05	2.05	2.05	2.05	2.05	2.05
Mercurous chloride lb.	106.00	112.50	124.50	106.00	126.00	120.00	132.00
Mercury metal, .75 lb flask lb.	.67	.69	.69	.67	.74	.67	.74
Meta-nitro-aniline lb.	1.50	1.55	1.55	1.50	1.55	1.50	1.80
Meta-nitro-para-toluidine 200 lb bbls lb.	.80	.84	.84	.80	.90	.80	.94
Meta-phenylene-diamine 300 lb bbls lb.	.67	.69	.69	.67	.72	.67	.74
Meta-toluene-diamine, 300 lb bbls lb.							
Methanol							
Methanol, (Wood Alcohol), gal.	.35	.37	.48	.35	.65	.51	.58
95% gal.	.39	.43	.49	.39	.65	.53	.60
Pure Synthetic drums cars gal.	.42½	.50	.42½	.68	.53	.63	.44
Synthetic tanks gal.	.40½	.50	.40½	.66	.54	.68	.48
Methyl Acetate, drums gal.	Nom.	Nom.	Nom.	.95	.95	.95	.95
Acetone gal.	.62	.70	.77	.65	.85	.73	.90
Anthraquinone, lb.	.85	.95	.85	.70	.95	.85	.95
Cellosolve, (See Ethylene Glycol Monoc Methyl Ether)							
Chloride, 90 lb cyl. lb.	.45	.45	.45	.60	.45	.60	.55
Furoate, tech, 50 gal. dr., lb.	.50	.50	.50	.50	.50	.50	.50
Mica, dry grd. bags wks lb.	65.00	80.00	80.00	65.00	80.00	65.00	80.00
Wet, ground, bags wks lb.	110.00	115.00	115.00	110.00	115.00	110.00	115.00
Michler's Ketone, kegs lb.	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Mono-chlorobenzene, drums see, lb.							
Chlorobenzene, mono. lb.	.70	.75	.75	.70	.75	.70	.75
Monoethylorthotoluidine, drs lb.	3.75	4.00	4.00	3.75	4.20	3.75	4.20
Montan Wax, crude, bags lb.	.06	.07	.07	.06	.07	.06½	.07
Myrobalans 25%, liq bbls lb.	.03½	.04½	.04½	.03½	.04½	.03½	.04½
50% Solid, 50 lb boxes lb.	.05	.05½	.05½	.05	.05½	.05	.05½
J1 bags, ton	34.00	35.00	41.00	34.00	43.00	40.00	50.00
J2 bags, ton	19.75	22.50	26.50	19.75	40.00	26.50	40.00
R2 bags, ton	19.00	20.00	27.50	19.00	34.00	27.50	40.00
Naphtha, v. m. & p. (deodorized) bbls gal.	.17	.18	.16	.16	.18	.16	.18
Naphthalene balls, 250 lb bbls wks lb.	.03½	.04½	.05½	.03½	.05½	.05½	.06
Crushed, chipped bgs wks lb.	.04	.04½	.04	.04	.04½	.04½	.04½
Flakes, 175 lb bbls wks lb.	.03½	.05	.03½	.05	.05	.05	.05
Nickel Chloride, bbls kegs lb.	.20	.21	.20	.24	.20	.24	.21
Oxide, 100 lb kegs NY lb.	.37	.40	.40	.37	.40	.37	.38
Salt bbl. 400 bbls lb NY lb.	.10½	.13	.13	.10½	.13	.13	.09½
Single, 400 lb bbls NY lb.	.10½	.12	.13	.10½	.13	.13	.09
Nicotine, free 40%, 8 lb tins, cases lb.	1.25	1.30	1.30	1.25	1.30	1.25	1.30
Sulfate, 10 lb tins lb.	.98½	1.20	1.20	.98½	1.20	.98½	1.20
Nitric Cake, bulk ton	12.00	14.00	18.00	12.00	18.00	12.00	14.00
Nitrobenzene, redistilled, 1000 lb drs wks lb.	.09	.09½	.09½	.09	.10½	.09	.10½
Nitrocellulose, c-l-l-cl, wks lb.	.25	.36	.36	.25	.36	.25	Nom.
Nitrogenous Material, bulk unit	2.50	2.70	3.40	2.50	4.00	3.40	4.00
Nitronaphthalene, 550 lb bbls lb.	.25	.25	.25	.25	.25	.25	.25
Nitrotoluene, 1000 lb drs wks lb.	.14	.15	.15	.14	.15	.14	.15
Nutgalls Aleppy, bags lb.	.16	.16½	.16½	.16	.16½	.16	Nom.
Chinese, bags lb.	.12	.13	.13	.12	.13	.12	.18
Oak Bark, ground, ton	30.00	35.00	35.00	30.00	50.00	30.00	50.00
Whole, ton	20.00	23.00	23.00	20.00	23.00	20.00	23.00
Orange-Mineral, 1100 lb casks NY lb.	.11½	.13	.13	.11½	.13½	.11½	.13½
Orthoaminophenol, 50 lb kgs lb.	2.15	2.25	2.25	2.15	2.25	2.15	2.25
Orthoanisidine, 100 lb drs lb.	2.50	2.60	2.60	2.50	2.60	2.50	2.60
Orthochlorophenol, drums lb.	.50	.65	.65	.50	.65	.50	.65
Orthocresol, drums lb.	.25	.25	.35	.18	.28	.18	.28
Orthodichlorobenzene, 1000 lb drums lb.	.07	.10	.10	.07	.10	.07	.10
Orthonitrochlorobenzene, 1200 lb drs wks lb.	.30	.33	.33	.30	.33	.30	.35
Orthonitrotoluene, 1000 lb drs wks lb.	.16	.18	.18	.16	.18	.16	.18
Orthonitrophenol, 350 lb dr lb.	.85	.90	.90	.85	.90	.85	.90
Orthotoluidine, 350 lb bbl 1c-1 lb.	.25	.30	.30	.25	.30	.25	.31

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Purchasing Power of the Dollar: 1926 Average—\$1.00 - 1930 Average \$1.161 - Jan. 1930 \$1.072 - Dec. 1930 \$1.255

Potash Salts — The market during the past month was very quiet with prices unchanged from former levels. Imports of all potash materials during November amounted to 19,706 tons. During the same month last year more than 50,000 tons of these necessary fertilizer materials were brought in. The largest decline was shown by manure salts, of which 5,117 tons were imported during November, as compared with 25,957 tons in November, 1929, and 22,300 tons during November, 1928. For the four months, August-November, the imports of this group amounted to 302,973 tons, compared with 357,456 tons imported during like period a year ago and 380,048 tons during the same months of 1928. With the exception of kainite the tonnage of all potash materials has declined from that of a year ago. The decline in manure salts has been very heavy. During the four months, August-November, 39,362 tons of kainite, were imported, compared with 20,512 tons and 30,225 tons, respectively, for the same months of 1929 and 1928.

Rosin — Price changes during the month moved within a very narrow range with sales limited to small lots. A slight increase in stocks was reported in the primary markets as the month closed. November production of naval stores by steam distillation and solvent treatment of wood and stocks of these products on hand November 30, were as follows:

	Production		
	Rosin 500-lb. barrels	Gallons Turpen- tine	Pine oil
Month of November, 1930.....	38,931	329,201	229,979
Total from Apr. 1, 1930.....	314,221	2,701,762	1,886,751
Stocks at Plants			
Total November 30, 1930.....	119,727	694,758	1,707,540
Total March 31, 1930.....	91,496	706,277	1,211,826
Change.....	+28,231	-11,519	+495,714

Sal Soda — Contracts for 1931 were being made at 1930 prices. Demand from the silk dyeing centers was light, but the cleaning outlets were absorbing a fair amount of material.

Shellac — The local market passed through a very quiet period even for the holiday season. Buyers were determined to carry through the balance of the year with small stocks. As a result prices were mostly nominal. Prices were lower in both London and Calcutta as the year ended. The consensus of opinion among the importers was that with the opening of the 1931 season the demand would show a decided improvement. Actual stocks in the hands of dealers and consumers are thought to be very low.

	Current Market	1930		1929		1928	
		High	Low	High	Low	High	Low
Orthonitroparachlorophenol, tins							
Orange, crystals.....lb.	.70	.75	.70	.75	.70	.75	.70
51 deg. liquid.....lb.	.16	.17	.16	.17	.16	.17	.16
Powdered, 100 lb bags.....lb.	.07	.07½	.07½	.07	.07½	.07	.07½
Paraffin, retd, 200 lb cs alaba	.14½	.15	.14½	.15	.14½	.15	.14½
123-127 deg. M. P.....lb.	.03½	.03	.04½	.03½	.04½	.03½	.04½
128-132 deg. M. P.....lb.	.03½	.03½	.06½	.03½	.07	.04½	.07½
133-137 deg. M. P.....lb.	.04½	.07½	.07½	.04½	.07½	.06½	.08½
Para Aldehyde, 110-55 gal drs.....lb.	.20½	.23	.23	.20½	.28	.20½	.28
Aminoacetanilid, 100 lb bg. lb	.52	.60	1.05	.52	1.05	1.00	1.05
Aminohydrochloride, 100 lb							
kegs.....lb.	1.25	1.30	1.30	1.25	1.30	1.25	1.30
Aminophenol, 100 lb kegs.....lb.	.92	1.25	1.02	.92	1.15	.99	1.15
Chlorophenol, drums.....lb.	.60	.65	.65	.60	.65	.60	.65
Coumarone, 330 lb drums. lb							
Cymene, retd, 110 gal dr. gal.	2.25	2.50	2.50	2.25	2.50	2.25	2.50
Dichlorobenzene, 150 lb bbl:							
wks.....lb.	.17	.20	.20	.17	.20	.17	.20
Nitroacetanilid, 300 lb bbls.....lb.	.50	.55	.55	.50	.55	.50	.55
Nitroaniline, 300 lb bbls wks							
.....lb.	.48	.55	.55	.48	.55	.48	.55
Nitrochlorobenzene, 1200 lb drs							
wks.....lb.	.23	.26	.26	.23	.26	.23	.26
Nitro-orthotoluidine, 300 lb							
bbls.....lb.	2.75	2.85	2.85	2.75	2.85	2.75	2.85
Nitrophenol 185 lb bbls.....lb.	.45	.50	.50	.45	.50	.45	.50
Nitrosodimethylaniline, 120 lb							
bbls.....lb.	.92	.94	.94	.92	.94	.92	.94
Nitrotoluene, 350 lb bbls.....lb.	.29	.31	.31	.29	.31	.29	.31
Phenylenediamine, 350 lb bbls							
.....lb.	1.15	1.20	1.20	1.15	1.20	1.15	1.20
Tolueneulfonamide, 175 lb							
bbls.....lb.	.70	.75	.75	.70	.75	.70	.75
Toluenesulfonchloride, 410 lb							
bbls wks.....lb.	.20	.22	.22	.20	.22	.20	.22
Toluidine, 350 lb bbls wk.....lb.	.38	.40	.40	.38	.42	.38	.42
Paris Green, Arsenic Basis							
100 lb kegs.....lb.	.....	.27	.27	.....	.27	.25	.25
250 lb kegs.....lb.	.....	.25	.25	.....	.25	.23	.23
Persian Berry Ext., bbls.....lb.	.25	Nom.	Nom.	.25	.25	.....	.....
Pentastol (see Alcohol, Amyl).....							
Pentastol Acetate (see Amyl Ace- tate).....							
Petrolatum, Green, 300 lb bbl:lb.	.02	.02½	.02½	.02	.02½	.02	.03
Phenol, 250-100 lb drums.....lb.	.14½	.15	.15	.14½	.16	.13	.13
Phenyl - Alpha - Naphthylamine, 100 lb kegs.....lb.	.....	1.35	1.35	1.35	1.35	1.35	1.35
Phenylhydrazine Hydrochloride.....lb.	2.90	3.00	3.00	2.90			

Phosphate

Phosphate Acid (see Superphosphate)							
Phosphate Rock, f.o.b. mines							
Florida Pebble, 68% basis, ton	3.10	3.25	3.15	3.00	3.15	3.00	3.15
70% basis.....ton	3.75	3.90	4.00	3.75	4.00	3.50	3.65
72% basis.....ton	4.25	4.35	4.50	4.25	4.50	4.00	4.15
75-74% basis.....ton	5.25	5.50	5.50	5.25	5.50	5.00	5.00
75% basis.....ton	.....	5.75	5.75	5.75	5.75	5.75	5.75
77-80% basis.....ton	.....	6.25	6.25	6.25	6.25	6.25	6.25
Tennessee, 72% basis.....ton	.....	5.00	5.00	5.00	5.00	5.00	5.00
Phosphorous Oxichloride 175 lb							
cyl.....lb.	.18	.20	.25	.18	.40	.20	.40
Red, 110 lb cases.....lb.	.37½	.42	.42	.37½	.60	.37½	.65
Yellow, 110 lb cases wks.....lb.	.31	.37½	.37½	.31	.32	.31	.32
Sesquisulfide, 100 lb cs.....lb.	.....	.44	.44	.44	.46	.44	.46
Trichloride, cylinders.....lb.	.18	.20	.25	.18	.35	.20	.....
Phthalic Anhydride, 100 lb bbls							
wks.....lb.	.15	.16	.20	.15	.20	.18	.20
Pigments Metallic, Red or brown							
bags, bbls, Pa. wks.....ton	37.00	45.00	45.00	37.00	45.00	37.00	45.00
Pine Oil, 55 gal drums or bbls							
Destructive dist.....lb.	.63	.64	.64	.63	.64	.63	.64
Prime bbls.....bbl.	8.00	10.60	10.60	8.00	10.60	8.00	10.60
Steam dist. bbls.....gal.	.65	.70	.70	.65	.70	.65	.70
Pitch Hardwood.....ton	35.00	45.00	45.00	35.00	45.00	40.00	45.00
Plaster Paris, tech, 250 lb bbls							
.....bbl.	3.30	3.50	3.50	3.30	3.50	3.30	3.50

Potash

Potash, Caustic, wks, solid.....lb.	.06½	.06½	.06½	.06½	.07½	.06½	.07½
flake.....lb.	.0705	.08	.08	.0705	.07½	.0705	.07½
Potash Salts, Rough Kainit							
12.4% basis bulk.....ton	.....	9.20	9.20	9.10	9.10	9.00	9.00
14% basis.....ton	.....	9.70	9.70	9.60	9.60	9.50	9.50
Manure Salts.....ton							
20% basis bulk.....ton	.....	12.65	12.65	12.50	12.50	12.40	12.40
30% basis bulk.....ton	.....	19.15	19.15	18.95	18.95	18.75	18.75
Potassium Acetate.....lb.	.27	.30	.30	.27			
Potassium Muriate, 80% basis							
bags.....ton	.....	37.15	37.15	36.75	36.75	36.40	36.40
Pot. & Mag. Sulfate, 48% basis							
bags.....ton	.....	27.80	27.80	27.50	27.50	27.00	27.00
Potassium Sulfate, 90% basis							
bags.....ton	.....	48.25	48.25	47.75	47.75	47.30	47.30
Potassium Bicarbonate, USP, 320							
lb bbls.....lb.	.09½	.10	.10	.09½	.14	.09½	.09½
Bichromate Crystals, 725 lb							
cases.....lb.	.08½	.09½	.09½	.08½	.09½	.09	.09½
Powd., 725 lb cks wks.....lb.	.13	.13½	.13½	.13	.13½	.13	.12½

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Purchasing Power of the Dollar: 1926 Average—\$1.00 - 1930 Average \$1.161 - Jan. 1930 \$1.072 - Dec. 1930 \$1.255

Sodium Bichromate — Spot sales and current shipments were very quiet as the year closed, with both buyers and sellers engaged in inventories. Producers report large tonnages booked at prices unchanged from the 1930 contract prices. Tanning operations continue to be disappointing, but color manufacturers are entering the market in a larger way than for some time past.

Sodium Nitrate — Sales were strictly limited to small lots. Effective Jan. 1, the schedule advanced to \$2.05 a cwt. with prices of both imported and domestic material being firmly held. Due largely to economic reasons it is very improbable that any improvement in the demand will be noticed for the next three or four weeks. Chilean nitrate exports during the first nine months of 1930 declined to 1,090,506 metric tons, as compared with 2,159,586 and 1,888,555 in the corresponding months of 1929 and 1928, respectively. Particulars of the trade for the first nine months of 1929 and 1930, in metric tons, are as follows:

Country of Destination	1929	1930
Germany.....	25,274	.....
Egypt.....	107,527	96,493
France.....	65,498	23,876
Mediterranean countries.....	14,233	1,016
United Kingdom (direct ship- ments).....	15,748	2,032
United Kingdom.....	944,090	357,036
Russia.....	78,500	.....
United States.....	823,108	461,915
British India.....	15,728	7,377
Japan.....	42,529	14,470
South Africa.....	23,950	17,102
All other, including domestic	81,901	30,689
Total.....	2,159,586	1,090,506

Production of 1,968,684 tons in nine months of 1930 shows a decline from 2,416,939 and 2,300,940 in the corresponding months of 1929 and 1928, respectively. Exports and stocks of Chilean nitrate for the first ten months of 1930 were as follows (metric tons):

	Exports		World Stocks	
	1929	1930	1929	1930
Jan.....	439,686	234,937	2,193,542	2,732,040
Feb.....	269,030	169,291	2,109,392	2,678,703
March.....	285,767	187,594	1,883,025	2,495,767
April.....	218,439	78,836	1,707,325	2,323,372
May.....	149,703	74,573	1,623,458	2,310,965
June.....	144,826	136,595	1,831,065	2,401,600
July.....	208,639	66,048	2,013,172	2,515,855
Aug.....	191,190	79,139	2,127,972	2,627,555
Sept.....	261,460	222,025	2,300,124	.....
Oct.....	249,042	.....	2,454,576	.....
Nov.....	228,031	.....	2,621,833	.....
Dec.....	.....	.....	.....	.....

Sodium Phosphate — Tri-salt — Inventory and holiday period tended to discourage sales specially of sizable tonnages. It is expected however that improvement would be in evidence with the turn of the year, due to the fact that consumers have been pursuing a policy of purchasing for immediate requirements because of the extreme unsettlement in the market during the last

	Current Market	1930		1929		1928	
		High	Low	High	Low	High	Low
Binoxiate, 300 lb bbls.....lb.	.14	.17	.17	.14	.17	.17	.16
Bisulfate, 100 lb kegs.....lb.	.....	.30	.30	.30	.30	.30	.30
Carbonate, 80-85% calc. 800 lb casks.....lb.	.05½	.05½	.05½	.05½	.05½	.05½	.05½
Chlorate crystals, powder 112 lb keg wks.....lb.	.08	.08½	.09	.08	.09	.09	.06½
Chloride, crys bbls.....lb.	.05½	.06	.05½	.05½	.05½	.05½	.05½
Chromate, kegs.....lb.	.23	.28	.23	.23	.23	.23	.27
Cyanide, 110 lb. cases.....lb.	.55	.57½	.57½	.55	.57½	.55	.55
Metabisulfite, 300 lb. bbl.....lb.	.12	.13	.12	.12	.11½	.12	.11½
Oxalate, bbls.....lb.	.20	.24	.20	.24	.16	.17	.16
Perchlorate, casks wks.....lb.	.11	.12	.11	.12	.11	.12	.11
Permanganate, USP, crys 500 & 100 lb drs wks.....lb.	.16	.16½	.16	.16½	.16	.15½	.15
Prussiate, red, 112 lb keg.....lb.	.38	.40	.38	.40	.38	.38	.37
Yellow, 500 lb casks.....lb.	.18½	.21	.18½	.21	.18½	.18½	.18
Tartrate Neut, 100 lb keg.....lb.	.....	.21	.21	.51	.51	.51	.51
Titanium Oxalate, 200 lb bbls.....lb.	.21	.23	.21	.25	.21	.25	.25
Propyl Furoate, 1 lb tins.....lb.	.....	5.00	5.00	5.00	5.00	.....	.....
Pumice Stone, lump bags.....lb.	.04	.05	.04	.05	.04	.05	.04
250 lb bbls.....lb.	.04½	.06	.04½	.06	.04½	.06	.04½
Powdered, 350 lb bags.....lb.	.02½	.03	.02½	.03	.02½	.03	.02½
Putty, commercial, tubs.....100 lb.	.....	.03½	.03½	.03½	.03½	.03½	.03½
Linseed Oil, kegs.....100 lb.	.....	.05½	.05½	.05½	.05½	.05½	.05½
Pyridine, 50 gal drums.....gal.	1.50	1.75	1.50	1.75	1.50	1.50	1.50
Pyrites, Spanish cif Atlantic ports bulk.....unit	.13	.13½	.13	.13½	.13	.13	.13
Quebracho, 35% liquid tks.....lb.	.02½	.04	.02½	.04	.03	.04	.03
450 lb bbls e-1.....lb.	.03½	.03½	.03½	.04	.03½	.04	.03½
35% Bleaching, 450 lb bbl.....lb.	.04½	.05½	.04½	.05½	.04½	.05	.04
Solid, 63%, 100 lb bales cif.....lb.	.05	.05½	.05	.05½	.05	.05	.05
Clarified, 64%, bales.....lb.	.....	.05½	.05½	.05½	.05½	.05	.05
Quercitron, 51 deg liquid 450 lb bbls.....lb.	.05½	.06	.05½	.06	.05½	.06	.05½
Solid, 100 lb boxes.....lb.	.09½	.13	.09½	.13	.10	.13	.10
Bark, Rough.....ton	.....	14.00	14.00	14.00	14.00	14.00	14.00
Ground.....ton	34.00	35.00	34.00	35.00	34.00	35.00	34.00
R Salt, 250 lb bbls wks.....lb.	.40	.44	.45	.46	.44	.46	.45
Red Sanders Wood, grd bbls.....lb.	.....	.18	.18	.18	.18	.....	.....
Resorcinol Tech, cans.....lb.	.90	1.25	.90	1.25	1.15	1.35	1.25
Rosin Oil, 50 gal bbls, first run	.....	.56	.58	.56	.62	.57	.57
Second run.....gal.	.59	.61	.59	.64	.60	.62	.62

Rosin

Rosins 600 lb bbls 280 lb.....unit							
B.....	4.95	7.75	5.35	9.25	7.45	9.75	8.20
D.....	5.10	8.00	5.50	9.25	7.70	9.80	8.25
E.....	5.30	8.17	5.52½	9.27	8.30	9.95	8.60
F.....	5.35	8.45	5.55	9.27	8.40	10.10	8.65
G.....	5.40	8.45	5.60	9.45	8.40	10.10	8.75
H.....	5.53½	8.55	5.60	9.50	8.40	10.10	8.75
I.....	5.57½	8.58	5.62½	9.50	8.40	10.15	8.80
K.....	5.65	8.65	5.62½	9.55	8.45	10.15	8.85
M.....	5.85	8.80	5.65	9.85	8.50	10.30	8.85
N.....	6.40	8.95	6.05	10.30	8.93	11.00	9.15
WG.....	7.80	9.25	6.85	11.30	9.00	11.65	10.15
WW.....	8.50	9.85	7.85	12.30	9.30	12.65	10.40
Rotten Stone, bags mines.....ton	24.00	20.00	30.00	18.00	30.00	24.00	30.00
Lump, imported, bbls.....lb.	.05	.07	.05	.08	.05	.08	.07
Selected bbls.....lb.	.09	.12	.09	.12	.09	.12	.09
Powdered, bbls.....lb.	.02	.05	.02	.05	.02	.05	.02
Sago Flour, 150 lb bags.....lb.	.04½	.05	.04½	.05	.04½	.05	.04½
Salt Soda, bbls wks.....100 lb.	.....	1.00	1.00	1.00	1.00	.....	.....
Salt Cake, 94-96% e-1 wks.....ton	15.50	19.00	15.50	24.00	19.00	20.00	19.00
Chrome.....ton	14.50	17.00	14.50	21.00	12.00	17.00	15.00
Saltpetre, double reft granular 450-500 lb bbls.....lb.	.06½	.06½	.06½	.06½	.06½	.06½	.06½
Satin, White, 500 lb bbls.....lb.	.....	.01½	.01½	.01½	.01½	.01½	.01½
Shellac Bone dry bbls.....lb.	.28	.33	.28	.47	.47	.62½	.49
Garnet, bags.....lb.	.24	.28	.24	.45	.40	.55	.45
Superfine, bags.....lb.	.20	.27	.39	.47	.39	.58	.47
T. N. bags.....lb.	.18	.19	.34	.44	.36	.55	.42
Schaeffer's Salt, kegs.....lb.	.53	.57	.53	.57	.53	.57	.53
Silica, Crude, bulk mines.....ton	8.00	11.00	8.00	11.00	8.00	11.00	8.00
Refined, floated bags.....ton	22.00	30.00	22.00	30.00	22.00	30.00	22.00
Air floated bags.....ton	.....	32.00	32.00	32.00	32.00	.....	.....
Extra floated bags.....ton	32.00	40.00	32.00	40.00	32.00	40.00	32.00
Soapstone, Powdered, bags f. o. b. mines.....ton	15.00	22.00	15.00	22.00	15.00	22.00	15.00

Soda

Soda Ash, 58% dense, bags e-1 wks.....100 lb.	Turn to report	1.40	1.40	1.40	1.40	1.40	1.40
58% light, bags.....100 lb.	on Alkalies	1.34½	1.34½	1.34½	1.34½	2.29	2.40
Contract, bags e-1 wks 100 lb.		1.32	1.32	1.32	1.32	1.32½	1.32½
Soda Caustic, 76% grnd & flake drums.....100 lb.	for prices	3.35	3.00	3.35	3.35	4.21	4.16
76% solid drs.....100 lb.		2.95	2.90	2.95	2.95	3.91	3.76
Sodium Acetate, tech.....450 lb. bbls wks.....lb.	.05	.05½	.05½	.04	.06½	.04½	.04½
Arsenate, drums.....lb.	.18	.19	.18	.19	.....	.....	.....
Arsenite, drums.....gal.	.50	.75	1.00	.50	1.50	.75	.....
Bicarb, 400 lb bbl NY.....100 lb.	2.41	2.41	2.41	2.41	2.41	2.41

Chemical Markets

Jan. '31: XXVIII, 1

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Purchasing Power of the Dollar: 1926 Average—\$1.00 - 1930 Average \$1.161 - Jan. 1930 \$1.072 - Dec. 1930 \$1.255

two months. Stocks in consumers' hands are undoubtedly small and producers are convinced that sales in the next month will be large. Di-salt, with the silk-weighting centers operating at restricted schedules over the holidays, actual sales and shipments were small. Prices of both the tri- or di-salt remained stationary at the levels reached during the latter part of November.

Sodium Prussiate — Dullness prevailed in this market with no outside factors entering into the situation. Prices were unchanged.

Sodium Stannate — With tin at a new low level for several years producers were forced to make a reduction of 3c a lb., the new level being 21-24c a lb. according to quantity.

Starches — The unsettled condition in the corn market brought about a further weakness in the starch market, and several grades were lower at the close of the month.

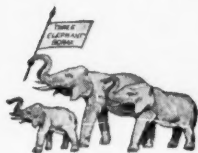
Sulfur — No change occurred during the month. Prices remained unchanged with shipments fair for the holiday period. Export trade in sulfur during the first ten months of the year was approximately 45 per cent off from a like period of 1929, according to the figures compiled by the Department of Commerce, which were 736,432 tons for 1929 and only 532,373 tons for the 1930 period. These figures included the October shipments, which were 117,021 tons in 1929 and 77,410 tons in 1930. Imports of pyrites in October were 24,527 tons, compared with 35,385 tons in October, 1929, and the receipts for the ten-month period ended October were 328,160 tons in 1930, compared with 411,679 tons in 1929.

Turpentine — The market was devoid of any new features. The primary markets were quiet as the holiday season approached with purchasing limited to small quantities for current needs only. Some increases in stocks were reported in Savannah and Jacksonville.

Zinc — The metal market showed a stronger tendency during the last part of the month and two separate advances of five points were made within the closing week. The closing price as of Dec. 29 was .0445c a lb., for New York and .0410 for East St. Louis. Zinc stocks of American producers at the end of November amounted to 142,838 tons, compared with 141,232 at the close of October, a gain of 1,606 tons, according to the American Zinc Institute. Production for November was 31,976 tons, against 40,940 in October.

	Current Market	1930		1929		1928	
		High	Low	High	Low	High	Low
Bichromate, 500 lb cks wks. lb.	.07	.07½	.07½	.07	.07½	.07	.06½
Bisulfite, 500 lb bbl wks. lb.	.04	.04	.04	.04	.04	.04	.04
Carb. 400 lb bbls NY. 100 lb.	2.30	2.30	2.30	1.35	1.30	1.35	1.30
Chlorate, wks. lb.	.05½	.07½	.08	.05½	.11	.06½	.05½
Chloride, technical, 100 lb.	12.00	13.00	13.00	12.00	13.00	13.00	12.00
Cyanide, 96-98%, 100 & 250 lb drums wks. lb.	.16	.17	.20	.16	.20	.18	.20
Fluoride, 300 lb bbls wks. lb.	.08½	.08½	.09	.08½	.09	.08½	.08½
Hydroxide, 200 lb bbls f. o. b. wks. lb.	.22	.24	.24	.22	.24	.22	.24
Hypochlorite solution, 100 lb cbs. lb.	.05	.05	.05	.05	.05	.05	.05
Hyposulfite, tech, pea cys 375 lb bbls wks. 100 lb.	2.40	3.00	3.00	2.40	3.05	2.50	2.65
Technical, regular crystals 375 lb bbls wks. 100 lb.	2.50	2.65	2.65	2.50	2.65	2.40	2.65
Metanilate, 150 lb bbls. lb.	.44	.45	.45	.44	.45	.45	.45
Monohydrate, bbls. lb.	.02	.02½	.02½	.02	.02½	.02	.02
Naphthionate, 300 lb bbl. lb.	.52	.54	.52	.57	.54	.57	.55
Nitrate, 92%, crude, 200 lb bags c-1 NY. 100 lb.	2.02	2.22½	1.99	2.22½	2.09	2.45	2.12½
Nitrite, 500 lb bbls spot. lb.	.07½	.08	.07½	.08	.07½	.08½	.07½
Orthochlorotoluene, sulfonate, 175 lb bbls wks. lb.	.25	.27	.27	.25	.27	.25	.25
Oxalate Neut, 100 lb kegs. lb.	.37	.42	.42	.37	.42	.37	.20
Perborate, 275 lb bbls. lb.	.18	.20	.20	.18	.22	.18	.22
Phosphate, di-sodium, tech. 310 lb bbls. 100 lb.	2.65	3.00	3.25	2.65	3.55	3.25	3.55
tri-sodium, tech, 325 lb bbls. 100 lb.	3.25	3.50	4.00	3.25	4.00	3.90	.69
Picramate, 100 lb kegs. lb.	.69	.72	.72	.69	.72	.69	.72
Prussiate, Yellow, 350 lb bbl wks. lb.	.11½	.12	.12½	.11½	.12½	.12	.12
Pyrophosphate, 100 lb keg. lb.	.15	.20	.20	.15	.20	.15	.13½
Silicate, 60 deg 55 gal drs, wks 100 lb.	1.65	1.65	1.65	1.65	1.65	1.45	1.20
40 deg 55 gal drs, wks 100 lb.	.70	.80	.80	.70	.80	.70	.85
Silicofluoride, 450 lb bbls NY. lb.	.04	.04½	.05½	.04	.05½	.05	.05
Stannate, 100 lb drums. lb.	.21	.24	.43	.24	.43	.38	.48½
Stearate, bbls. lb.	.20	.25	.29	.20	.29	.25	.29
Sulfanilate, 400 lb bbls. lb.	.16	.18	.18	.16	.18	.16	.18
Sulfate Anhyd, 550 lb bbls c-1 wks. lb.	.02½	.02½	.02½	.02½	.02½	.02½	.02½
Sulfide, 80% crystals, 440 lb bbls wks. lb.	.02½	.02½	.02½	.02½	.02½	.02½	.02½
62% solid, 650 lb drums 1c-1 wks. lb.	.03	.03½	.03½	.03	.04	.03½	.03½
Sulfite, crystals, 400 lb bbls wks. lb.	.03	.03½	.03½	.03	.03½	.03	.03½
Sulfocyanide, bbls. lb.	.28	.35	.35	.28	.76	.28½	.40
Tungstate, tech, crystals, kegs lb.	.81	.88	.88	.81	1.40	.88	.85
Solvent Naphtha, 110 gal drs wks. gal.	.30	.38	.40	.30	.40	.35	.40
Spruce, 25% liquid, bbls. lb.	.01	.01½	.01½	.01	.01½	.01	.01½
25% liquid, tanks wks. lb.	.01	.01	.01	.01	.01	.01	.01
50% powd, 100 lb bag wks lb.	.02	.02½	.02½	.02	.02½	.02	.02
Starch, powd., 140 lb bags 100 lb.	3.42	3.52	4.02	3.42	4.12	3.82	4.42
Pearl, 140 lb bags. 100 lb.	3.22	3.72	3.92	3.32	4.02	3.72	4.32
Potato, 200 lb bags. lb.	.05½	.06	.06½	.05½	.06½	.05½	.06½
Imported bags. lb.	.05½	.06½	.06½	.05½	.06½	.05½	.06½
Soluble. lb.	.08	.08½	.08½	.08	.08½	.08	.08½
Rice, 200 lb bbls. lb.	.09	.10	.10	.09	.10	.09	.10
Wheat, thick bags. lb.	.06½	.07	.07	.06½	.07	.06½	.07
Thin bags. lb.	.09½	.10	.10	.09½	.10	.09½	.10
Strontium carbonate, 600 lb bbls wks. lb.	.07½	.07½	.07½	.07½	.07½	.07½	.07½
Nitrate, 600 lb bbls NY. lb.	.09	.09½	.09½	.09	.09½	.09	.08½
Peroxide, 100 lb drs. lb.	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Sulfur							
Sulfur Brimstone, broken rock, 250 lb bag c-1. 100 lb.	18.00	19.00	19.00	18.00	19.00	18.00	19.00
Crude, f. o. b. mines. ton							
Flour for dusting 99½%, 100 lb bags c-1 NY. 100 lb.	2.40	2.40	2.40	2.40	2.40	2.40	2.40
Heavy bags c-1. 100 lb.	2.50	2.50	2.50	2.50	2.50	2.50	2.50
Flowers, 100%, 155 lb bbls c-1 NY. 100 lb.	3.45	3.45	3.45	3.45	3.45	3.45	3.45
Roll, bbls 1c-1 NY. 100 lb.	2.65	2.85	2.85	2.65	2.85	2.65	2.85
Sulfur Chloride, red, 700 lb drs wks. lb.	.05	.05½	.05½	.05	.05½	.05	.05½
Yellow, 700 lb drs wks. lb.	.03½	.04½	.04½	.03½	.04½	.03½	.04½
Sulfur Dioxide, 150 lb cyl. lb.	.07	.07½	.07½	.07	.07½	.07	.07½
Extra, dry, 100 lb cyl. lb.	.10	.12	.12	.10	.19	.10	.17
Sulfuryl Chloride, 600 lb dr. lb.	.10	.65	.65	.10	.65	.10	.65
Talc, Crude, 100 lb bgs NY. ton	12.00	15.00	15.00	12.00	15.00	12.00	15.00
Refined, 100 lb bgs NY. ton	18.00	18.00	18.00	18.00	18.00	18.00	18.00
French, 220 lb bags NY. ton	18.00	22.00	22.00	18.00	25.00	18.00	35.00
Refined, white, bags. ton	35.00	40.00	40.00	35.00	45.00	35.00	45.00
Italian, 220 lb bags NY. ton	40.00	50.00	50.00	40.00	50.00	40.00	50.00
Refined, white, bags. ton	50.00	55.00	55.00	50.00	55.00	50.00	55.00
Superphosphate, 16% bulk, wks. ton	8.00	9.00	9.50	8.00	10.00	9.00	
Triple bulk, wks. unit	.65	.65	.65				
Tankage Ground NY. unit	3.20&10	4.00&10	3.20&10	4.50&10	4.00&10	5.10&10	4.65&10
High grade f.o.b. Chicago. unit	3.25&10	3.85&10	3.25&10	4.80&10	3.75&10	4.80&10	3.90&10
South American cif. unit	3.40&10	4.25&10	3.40&10	4.80&10	4.35&10	5.00&10	4.60&10
Tapioca Flour, high grade bgs. lb.	.03	.03½	.03½	.03	.05½	.04½	.05
Medium grade, bags. lb.	.02½	.04½	.04½	.02½	.04½	.03½	.04
Tar Acid Oil, 15% drums. gal.	.24	.25	.27	.24	.27	.26	.27
25% drums. gal.	.26	.28	.30	.26	.30	.29	.30

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Prices Current and Comment

Purchasing Power of the Dollar: 1926 Average—\$1.00 - 1930 Average \$1.161 - Jan. 1930 \$1.072 - Dec. 1930 \$1.255

Shipments totaled 30,370 tons, compared with 32,655 in October. Unfilled orders at the end of November were 24,481 tons, against 29,510 at close of October and 11,872 tons at the end of November, 1929.

Zinc Oxide — Demand from consuming centers was light throughout the month. Supplies in the hands of dealers were said to be small and with the turn of the year, an improvement was confidently looked for. Prices were fairly steady although some shading occurred on sizable orders.

Whiting — The holiday period reflected itself in the market with both sellers waiting the opening of 1931 buying year. This commodity has shown great stability in its price structure and 1931 contracts were placed at 1930 figures.

OILS AND FATS

Castor Oil — While consumers were showing some interest in prices for future delivery the market was lifeless with such sales as were made at generally lower quotations.

Chinawood Oil — Sellers were making little effort to interest buyers as the month closed, and as a consequence quotations were merely nominal.

Cocoonut Oil — A fair increase in offerings tended to weaken the market still further, with the result, that importers were offering tanks on the Pacific Coast at prices as low as 47¢. Quiet conditions prevailed throughout the month in the local market.

Corn Oil — Producers were holding back offerings as the year closed with the result, that sales were limited to small lots at unchanged prices. The nominal quotation on tanks, f. o. b. Western mills was 73¢.

Cottonseed Oil — The market in futures was rather a dull affair as the month and year closed with speculators in most instances refraining from assuming any commitments. Prices moved within narrow limits throughout the month. Cottonseed crushings for the months ended with November totaled 2,465,938 tons, against 2,290,171 tons for the corresponding period last year. Receipts of seed at mills during the period were 3,503,040 tons, against 3,411,238 tons in 1929, and stocks of seed on hand November 30 were 1,082,518 tons, against 1,162,673 tons on the same date last year. Cottonseed products manufactured from July 1 to November 30, the bureau's figures show, included 742,620,904 pounds of crude oil, against 705,913,130 pounds last year; 576,

	Current Market	1930 High	1930 Low	1929 High	1929 Low	1928 High	1928 Low
Terra Alba Amer. No. 1, bgs or bbls mills. 100lb.	1.15	1.75	1.75	1.15	1.75	1.15	1.75
No. 2 bags or bbls. 100lb.	1.50	2.00	2.00	1.50	2.00	1.50	2.00
Imported bags. lb.	.01	.01	.01	.01	.02	.01	.02
Tetrachlorethane, 50 gal dr. lb.	.09	.09	.09	.09	.09	.09	.09
Tetralene, 50 gal drs wks. lb.	.20	.20	.20	.20	.20	.20	.20
Thiocarbamid, 170 lb bbl. lb.	.26	.28	.28	.22	.24	.22	.24
Tin Bichloride, 50% soln, 100 lb bbls wks. lb.	.12	.12	.12	.14	.13	.17	.14
Crystals, 500 lb bbls wks. lb.	.25	.28	.34	.25	.38	.33	.41
Metal Straits NY. lb.	.26	.38	.26	.48	.39	.58	.48
Oxide, 300 lb bbls wks. lb.	.25	.29	.42	.25	.56	.42	.75
Tetrachloride, 100 lb drs wks. lb.	.18	.20	.18	.30	.27	.35	.30
Titanium Dioxide 300 lb bbl. lb.	.21	.50	.21	.50	.22	.40	.40
Pigment, bbls. lb.	.06	.07	.07	.06	.14	.07	.14
Toluene, 110 gal drs. gal.	.35	.40	.35	.45	.45	.45	.40
8000 gal tank cars wks. gal.	.30	.35	.30	.40	.40	.45	.35
Toluidine, 350 lb bbls. lb.	.90	.94	.90	.94	.90	.94	.90
Mixed, 900 lb drs wks. lb.	.27	.32	.27	.32	.31	.32	.31
Toner Lithol, red, bbls. lb.	.90	.95	.90	.95	.85	.90	.85
Para, red, bbls. lb.	.80	.80	.80	.80	.70	.80	.70
Toluidine. lb.	1.50	1.55	1.50	1.55	1.50	1.80	1.70
Triacetin, 50 gal drs wks. lb.	.32	.36	.32	.36	.32	3.90	3.60
Trichlorethylene, 50 gal dr. lb.	.10	.10	.10	.10	.10	.....	.....
Triethanolamine, 50 gal drs. lb.	.40	.42	.40	.60	.55	.....	.....
Tricresyl Phosphate, drs. lb.	.33	.45	.33	.45	.33	.50	.36
Triphenyl guanidine. lb.	.58	.60	.58	.70	.58	.73	.69
Phosphate, drums. lb.	.60	.70	.60	.75	.60	.75	.70
Tripoli, 500 lb bbls. 100 lb.	.75	2.00	2.00	1.75	2.00	1.75	3.00
Turpentine Spirits, bbls. gal.	.41	.42	.61	.41	.65	.51	.66
Wood Steam dist. bbls. gal.	.37	.39	.52	.36	.57	.49	.59
Urea, pure, 112 lb cases. lb.	.15	.17	.15	.30	.15	.20	.18
Fert. grade, bags c.i.f. ton	108.00	108.00	108.00	105.00	98.00	.....	.....
c. i. f. S. points. ton	109.30	109.30	109.30	106.30	99.30	.....	.....
Valonia Beard, 42%, tannin bags. ton	40.00	40.00	39.50	55.00	42.00	76.00	55.00
Cups, 30-31% tannin. ton	24.00	25.00	27.00	24.00	35.00	30.00	55.00
Mixture, bark, bags. ton	30.00	31.00	32.50	30.00	43.00	35.00	64.00
Vermillion, English, kegs. lb.	1.75	1.80	2.05	1.75	2.05	2.00	2.10
Vinyl Chloride, 16 lb cyl. lb.	.....	1.00	1.00	1.00	1.00	.....	.....
Wattle Bark, bags. ton	40.00	41.00	47.75	40.00	49.75	43.50	76.00
Extract 55%, double bags ex-dock. lb.	.05	.06	.06	.05	.06	.06	.05
Whiting, 200 lb bags, c-1 wks. 100 lb.	1.00	1.00	1.00	1.25	1.00	1.25	1.25
Alba, bags c-1 NY. ton	13.00	13.00	13.00	13.00	13.00	13.00	13.00
Gilders, bags c-1 NY. 100 lb.	1.35	1.35	1.35	1.35	1.35	1.35	1.35
Xylene, 10 deg tanks wks. gal.	.28	.31	.28	.33	.33	.32	.32
Commercial, tanks wks. gal.	.25	.30	.25	.32	.30	.32	.30
Xylidine, crude. lb.	.37	.38	.37	.38	.38	.38	.38

Zinc

Zinc Ammonium Chloride powd., 400 lb bbls. 100 lb.	5.25	5.75	5.75	5.25	5.75	5.25	5.85
Carbonate Tech, bbls NY. lb.	.10	.11	.11	.10	.11	.10	.09
Chloride Fused, 600 lb drs. wks. lb.	.05	.06	.06	.05	.06	.05	.06
Gran., 500 lb bbls wks. lb.	.05	.06	.06	.05	.06	.06	.06
Soln 50%, tanks wks. 100 lb.	2.25	3.00	3.00	2.25	3.00	3.00	3.00
Cyanide, 100 lb drums. lb.	.38	.39	.41	.38	.41	.40	.40
Dithiofuroate, 100 lb dr. lb.	.....	1.00	1.00	1.00	1.00	1.00	.....
Dust, 500 lb bbls c-1 wks. lb.	.06	.07	.11	.06	.08	.08	.09
Metal, high grade alabs c-1 NY. 100 lb.	4.10	6.45	4.10	6.45	6.45	6.40	6.07
Oxide, American bags wks. lb.	.06	.07	.07	.06	.07	.07	.07
French, 300 lb bbls wks. lb.	.09	.11	.11	.09	.11	.09	.10
Perborate, 100 lb drs. lb.	1.25	1.25	1.25	1.25	1.25	.....	.....
Peroxide, 100 lb drs. lb.	1.25	1.25	1.25	1.25	1.25	.....	.....
Stearate, 50 lb bbls. lb.	.20	.23	.26	.20	.26	.25	.....
Sulfate, 400 bbl wks. lb.	.03	.03	.03	.03	.03	.03	.03
Sulfide, 500 lb bbls. lb.	.16	.16	.32	.16	.32	.30	.30
Sulfocarbonate, 100 lb keg. lb.	.28	.30	.30	.28	.30	.28	.29
Zirconium Oxide, Nat. kegs. lb.	.02	.03	.03	.02	.03	.02	.03
Pure kegs. lb.	.45	.50	.50	.45	.50	.45	.45
Semi-refined kegs. lb.	.08	.10	.10	.08	.10	.08	.10

Oils and Fats

Castor, No. 1, 400 lb bbls. lb.	.11	.12	.13	.11	.13	.13	.14
No. 3, 400 lb bbls. lb.	.11	.11	.13	.11	.13	.12	.14
Blown, 400 lb bbls. lb.	.13	.14	.15	.12	.15	.14	.17
China Wood, bbls spot NY. lb.	.07	.07	.13	.07	.16	.14	.17
Tanks, spot NY. lb.	.06	.06	.11	.06	.15	.13	.14
Coast, tanks. lb.	.05	.10	.05	.14	.12	.14	.12
Cocoonut, edible, bbls NY. lb.	.10	.10	.10	.10	.10	.11	.10
Ceylon, 375 lb bbls NY. lb.	.06	.08	.06	.09	.07	.10	.09
8000 gal tanks NY. lb.	.05	.06	.07	.05	.08	.06	.09
Cochin, 375 lb bbls NY. lb.	.07	.07	.09	.07	.10	.09	.10
Tanks NY. lb.	.07	.08	.07	.09	.08	.09	.08
Manila, bbls NY. lb.	.06	.07	.08	.06	.09	.07	.10
Tanks NY. lb.	.05	.05	.07	.05	.08	.06	.08
Tanks, Pacific Coast. lb.	.05	.06	.07	.05	.08	.06	.07

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Purchasing Power of the Dollar: 1926 Average—\$1.00 - 1930 Average \$1.161 - Jan. 1930 \$1.072 - Dec. 1930 \$1.255

558,869 pounds of refined oil, against 532,099,951 pounds; 1,109,794 tons of cake and meal, against 1,020,408 tons; 682,805 tons of hulls, against 626,932 tons; 427,979 running bales of linters, against 473,731 bales; 17,200 500-pound bales of hull fiber, against 1,848 bales and 15,406 500-pound bales of grabbotts, moles, etc., against 18,013 bales.

Lard Oil — While prices remained unchanged the market was in a rather weak condition due to a slackening in demand.

Linseed Oil — With seed prices in both the domestic and foreign markets lower slight shading was in evidence on sizable orders for the oil. Little improvement is looked for until such time as the raw commodity markets show further signs of stabilizing themselves. The outlook for the 1930 flaxseed crop is for one much larger in volume than 1929.

Menhaden Oil — The market on refined was in a very steady position with offerings light. Factories on Chesapeake Bay were operating at capacity.

Neatsfoot Oil — With offerings more than offsetting actual sales, the market was unsettled and generally weaker.

Oleo Oil — Offerings in all grades were in fairly large volume while consumer interest specially as the holiday season approached waned. Prices were fairly steady.

Olive Oil — Foots Buying improvement showed no improvement during the past month. Consumers are heavily stocked and importers were of the opinion that until such time as these surpluses were worked off little was to be gained in further price concessions.

Palm Oil — A fair amount of forward trading was reported in several quarters, with buyers contracting ahead for the first six months at prices varying between 4½-4¾¢ a lb., in bulk, c. i. f. Primary markets were reported by cable as being lower as the year closed.

Perilla Oil — Trading was exceptionally dull even for the holiday season of the year with only a few sales of small lots being reported. Prices were nominal.

Rapeseed Oil — Although the demand from consuming channels was relatively light, prices were maintained in a firm way.

Red Oil — The market was rather unsteady during the most of the month and as the year closed sales were of a very routine nature with prices nominal.

Soya bean Oil — Several large sized contracts for the first six months of 1931 were reported as signed during the last two weeks of 1930.

	Current Market	High	Low	High	Low	High	Low
Greases							
Cod, Newfoundland, 50 gal bbls							
Tanks NY.....gal.	.46	.48	.56	.46	.64	.57	.69
Cod Liver see Chemicals.....gal.	.48	.50	.62	.48	.60	.60	.63
Copra, bags.....lb.	.039	.046	.039	.05	.042	.06	.05
Corn, crude, bbls NY.....lb.	.08	.09	.10	.08	.10	.09	.11
Tanks, mills.....lb.	.07	.07	.08	.06	.09	.07	.10
Refined, 375 lb bbls NY.....lb.	.10	.10	.10	.09	.11	.10	.12
Tanks.....lb.	.08	.08	.10	.08	.11	.09	.11
Cottonseed, crude, mill.....lb.	.06	.07	.07	.06	.09	.08	.09
PSY 100 lb bbls spot.....lb.	.076	.08	.088	.076	.1075	.085	10 65
Jan.....lb.	.0720	.095	.073	.1080	.088	10 75	.09
Degras, American, 50 gal bbl							
NY.....lb.	.03	.04	.04	.03	.05	.03	.05
English, brown, bbls NY.....lb.	.04	.05	.05	.04	.05	.04	.05
Light, bbls NY.....lb.	.05	.05	.05	.05	.05	.05	.05
Dog Fish, Coast Tanks.....gal.	.32	.34	.32				
Greases							
Greases, Brown.....lb.	.04	.04	.06	.04	.08	.06	.08
Yellow.....lb.	.03	.05	.07	.03	.08	.06	.08
White, choice bbls NY.....lb.	.06	.06	.08	.06	.11	.07	.11
Herring, Coast, Tanks.....gal.	Nom.	Nom.	Nom.	Nom.	Nom.	Nom.	Nom.
Horse, bbls.....lb.	.05	.05	.05	.05	.05	.05	.05
Lard Oil, edible, prime.....lb.	.14	.15	.13	.12	.15	.14	.16
Extra, bbls.....lb.	.10	.10	.12	.10	.13	.12	.13
Extra No. 1, bbls.....lb.	.11	.09	.11	.09	.13	.11	.13
Linseed, Raw, five bbl lots.....lb.	.096	.102	.146	.096	.162	.105	10 8
Bbls c-1 spot.....lb.	.092	.098	.142	.092	.158	.101	10 4
Tanks.....lb.	.086	.092	.134	.086	.15	.093	9 6
Menhaden Tanks, Baltimore.....gal.	.21	.22	.50	.21	.52	.45	.48
Blown, bbls NY.....lb.	.07	.08	.09	.07	.09	.09	.09
Extra, bleached, bbls NY.....gal.	.52	.53	.70	.52	.70	.70	.70
Light, pressed, bbls NY.....gal.	.36	.38	.64	.36	.64	.63	.63
Yellow, bleached, bbls NY.....gal.	.38	.40	.67	.38	.67	.66	.66
Mineral Oil, white, 50 gal bbls							
Russian, gal.....gal.	.40	.60	.60	.40	.60	.40	.60
Neatsfoot, CT, 20° bbls NY.....lb.	.16	.16	.17	.16	.19	.18	.19
Extra, bbls NY.....lb.	.09	.10	.11	.09	.13	.12	.13
Fure, bbls NY.....lb.	.11	.12	.13	.11	.15	.13	.16
Oleo, No. 1, bbls NY.....lb.	.08	.09	.12	.08	.11	.10	.17
No. 2, bbls NY.....lb.	.08	.09	.11	.08	.11	.10	.15
No. 3, bbls NY.....lb.	.09	.09	.10	.09	.10	.09	.14
Olive, denatured, bbls NY.....gal.	.80	.80	1.00	.70	1.40	1.05	1.40
Edible, bbls NY.....gal.	1.75	2.00	2.00	1.75	2.00	1.95	2.00
Foots, bbls NY.....lb.	.06	.06	.08	.06	.11	.08	.11
Palm, Kernel, Casks.....lb.	.06	.06	.08	.06	.09	.08	.09
Lagos, 1500 lb casks.....lb.	.05	.06	.07	.05	.09	.07	.09
Niger, Casks.....lb.	.05	.05	.07	.05	.08	.07	.08
Peanut, crude, bbls NY.....lb.	Nom.	Nom.	Nom.	Nom.	Nom.	Nom.	Nom.
Refined, bbls NY.....lb.	.12	.14	.15	.12	.15	.14	.17
Perilla, bbls NY.....lb.	.10	.11	.14	.10	.20	.15	.21
Tanks, Coast.....lb.	.08	.09	.11	.08	.15	.13	.15
Poppyseed, bbls NY.....gal.	1.70	1.75	1.75	1.70	1.75	1.70	1.75
Rapeseed, blown, bbls NY.....gal.	.74	.78	1.00	.74	1.04	1.04	1.06
English, drms. NY.....gal.	.75	.82	.75	.90	.82	.92	.83
Japanese, drms. NY.....gal.	.56	.58	.70	.56	.88	.72	.90
Red, Distilled, bbls.....lb.	.08	.09	.10	.08	.11	.10	.10
Tanks.....lb.	.07	.08	.09	.07	.10	.09	.09
Salmon, Coast, 8000 gal tks.....gal.	Nom.	.44	.42	.44	.42	.50	.42
Sardine, Pacific Coast tks.....gal.	.18	.19	.42	.18	.51	.45	.50
Sesame, edible, yellow, dos.....lb.	.09	.10	.12	.09	.12	.11	.13
White, dos.....lb.	.10	.12	.10	.12	.12	.15	.12
Sod, bbls NY.....gal.	.40	.40	.40	.40	.40	.40	.40
Soy Bean, crude.....lb.	.07	.08	.09	.07	.10	.09	.09
Pacific Coast, tanks.....lb.	.07	.08	.08	.07	.10	.08	.12
Domestic tanks, f.o.b. mills.....lb.	.10	.10	.10	.10	.12	.11	.12
Crude, bbls NY.....lb.	.09	.09	.09	.09	.11	.10	.10
Tanks NY.....lb.	.13	.13	.13	.13	.13	.13	.13
Refined, bbls NY.....lb.	.13	.13	.13	.13	.13	.13	.13
Sperm, 38° CT, bleached, bbls NY.....gal.	.84	.85	.85	.84	.85	.84	.85
45° CT, bleached, bbls NY.....gal.	.79	.80	.80	.79	.80	.79	.80
Stearic Acid, double pressed dist bags.....lb.	.13	.14	.15	.13	.18	.15	.18
Double pressed saponified bags.....lb.	.14	.15	.15	.14	.19	.15	.19
Triple, pressed dist bags.....lb.	.15	.16	.17	.15	.20	.17	.20
Stearine, Oleo, bbls.....lb.	.08	.08	.09	.08	.12	.09	.12
Tallow City, extra loose.....lb.	.04	.05	.07	.04	.08	.07	.09
Edible, tierces.....lb.	.06	.06	.09	.05	.10	.08	.10
Tallow Oil, Bbls, c-1 NY.....lb.	.08	.08	.11	.08	.12	.10	.12
Acidless, tanks NY.....lb.	.08	.09	.10	.08	.11	.09	.11
Vegetable, Coast mats.....lb.	.06	Nom.	Nom.	.06	Nom.	.08	Nom.
Turkey Red, single bbls.....lb.	.10	.11	.12	.10	.12	.11	.11
Double, bbls.....lb.	.13	.15	.16	.13	.16	.14	.16
Whale, bleached winter, bbls NY.....gal.	.74	.74	.74	.80	.74	.80	.78
Extra, bleached, bbls NY.....gal.	.77	.77	.76	.76	.82	.76	.82
Nat. winter, bbls NY.....gal.	.71	.72	.73	.73	.78	.73	.78

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DYES
of all classes

INTERMEDIATES
of superior quality

SOLVENTS
produced by hydrogenation

DETERGENTS
utilizing their valuable
properties

and a number of Specialties —
such as FLEXO FILM PAINT



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Providence, R. I. Greensboro, N. C. Greenville, S. C.
Montreal, Can. Newnan, Ga.

"We"—Editorially Speaking

From time immemorial the New Year has been associated with the making of new resolutions and new plans. We, that is, "Editorially speaking," have made several, and even a casual glance through the issue, will, unquestionably we are sure, disclose several. Of greatest importance to the reader is the new arrangement of the news sections. **CHEMICAL MARKETS** is the business paper of the chemical and chemical process industries. As such, it is read by men whose time is valuable, but who must be informed as to the happenings in the field. **CHEMICAL MARKETS** is now assorting, condensing, and writing in a short readable style the news of the month in a way we believe will conserve our readers' time.

"American Dyestuff Reporter" complains editorially, "Up to the present time a large amount of the advertising done by chemical works has been in the form of staid announcements that John Doe offers such and such for sale. It seems to be that tradition, conservatism, and the fact these raw materials are remote from public interest, are the reasons for such a method of advertising."

Yet, on the front cover of the same issue, the Newport Chemical Works advertisement shows not a little ingenuity with the simple copy—"The Newport Colors—The same old yarn but try to match it! Merry Christmas and a Happy New Year." We do not agree wholly with our contemporary that chemical advertising is still wearing the ruffles of the gay nineties. Such a charge no doubt was true a few years ago, but a glance through the leading industrial papers indicates quite clearly that in layout, copy and definite reader appeal, the users of trade-paper space are today in step with the best in advertising practices. We commend to Mr. Howe's attention the advertisements in this issue of ours, particularly of Cabot, Natural Products Refining, Mathieson Alkali, Carbide, Diamond Alkali, Rossville, Kalbfleisch, Wishnick-Tumpeier, *et al.*

Crystal glasses and a short course in reading the future therefrom, should be part of the equipment of our leading executives. Then should anyone change positions he would not find himself in the position that now embarrasses one of the best known men of the industry. He is nationally known for his ability to do two things extremely well—use language, pointed, but sulphurous, and write a mighty close sales contract. The mistake

he made was to drive one of these "bargains" with the company that later engaged him. The market in the particular commodity he sold now has reached the stage where the buyer comes very near to naming his own price and he would like to get from under the very contract he obtained for his former company. We understand he is sitting up nights trying to think of ways of doing this but as yet it looks very much as though he had not left himself a loophole. At least his present superior, the president, can console himself with the certainty that his company's interests in sales contracts are now in very capable hands.

Under the heading, "The Vicious Circle", "Patton's Monthly," Pittsburgh Plate Glass Co.'s trade organ, reprints the following from "Progress."

"Here is a French allegory that points a moral worth remembering: A portrait

painter sat in his favorite cafe sipping his wine. His first small bottle finished, he was about to order another when his eye fell on a headline in the *Figaro*, "Hard Times are Coming," so instead of ordering his second bottle, he called for his check.

"Is there anything wrong with the wine?" asked the landlord.

"The wine is good, but I did not order a second bottle because hard times are coming and we must economize," explained the artist.

"Hard times," said the landlord. "Then my wife must not order the silk dress we planned, but must take one of cotton."

"Hard times," repeated the dressmaker when the order was cancelled. "This is no time to expand. I must not make the improvement I had planned in this place."

"Hard times, eh?" said the builder, when the dressmaker cancelled the building plans. "Then I cannot have my wife's portrait painted." So he wrote the artist and cancelled his order.

"After receiving the letter the artist went again to his favorite cafe, and ordered a small bottle of wine to soothe him. On a nearby chair was the paper in which he had read of hard times a few days before. He picked it up and read more closely, and found that it was two years old!"

Holding a bull by the tail is the way our sprightly neighbor the "Wall St. Journal" characterizes the latest report of the Farm Board. Some day in the future the picture of Uncle Sam in the middle of the Chicago Wheat pit, dusty grain being hurled at him, will seem funny; but not to the tax-payer. Our memory cannot help but wander back to the period, immediately following the World War, when agitation was rife for the adoption, in some form, of a nice subsidy for our infant chemical industries specially in the dye field. Strangely enough, many of those who are raising their voices loudest in support of the Chicago madness now were loudest then in their denunciation of the paternalistic schemes of a decade ago. Strange how convictions get jumbled in a politician's mind when a flock of votes are in the offing.

For an interesting and highly instructive summary of the growth of the dye industry in this country we recommend "Tariff Tinkering", an article in the January 3rd issue of the Saturday Evening Post by Senator David A. Reed of Pennsylvania.

COMING FEATURES

"Recent Developments in the German Potash Industry," by George W. Stocking, Professor of Economics, University of Texas. The first of three installments reviewing in detail the potash situation and its relationship to American commercial and agricultural life.

"Refining Zinc Electrolytically," by Dr. Charles W. Cuno, consulting engineer to the Industrial Club of St. Louis. Taking the new Evans-Wallower plant as an example, Dr. Cuno explains the radical changes in the metallurgy of zinc that have been made in the last few years.

In the Plant Management section, "Wooden Barrels in the Chemical Industry," by Louis F. Horn, secretary of the Co-öperation Industries of America; "The Vulcalock Process in the Chemical Process Industries," by H. E. Fritz, of the B. F. Goodrich Rubber Co. and "Treating Boiler feed Water," by W. E. Warner, National Aluminate Corp.